



# ***TML+, Tactical Medical Logistics Planning Tool User's Manual Version 4.1***

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***Naval Health Research Center***

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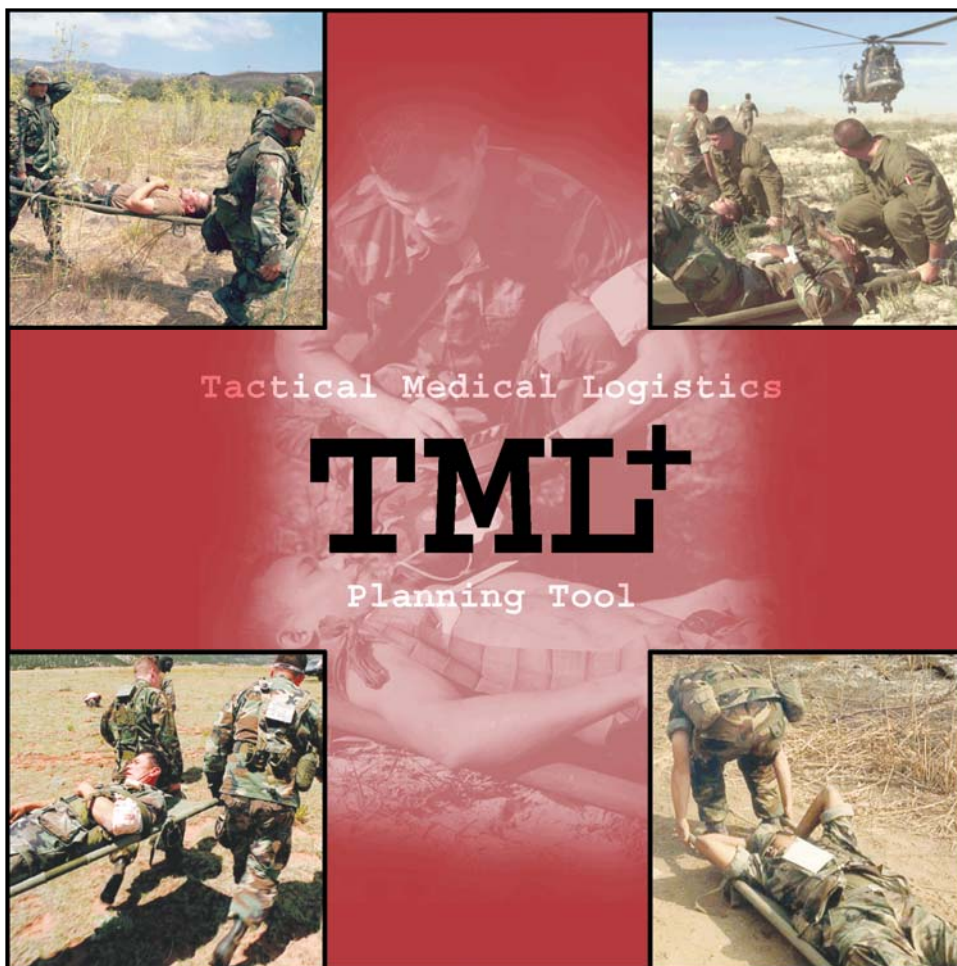


# TML+

Tactical Medical  
Logistics Planning Tool

User's Manual  
Version 4.1

March 9, 2006



An easy-to-use Windows®-based software program designed for military medical planners that models the flow of patients through battlefield medical treatment facilities.

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## Contributors

The TML+ project is a joint partnership between the Naval Health Research Center and Teledyne Brown Engineering, Inc. The following members of the TML+ Team designed and developed the TML+ database and computer application. Their medical and logistics knowledge, research expertise, computer programming capabilities, and technical writing skills contributed to the success of the TML+ project and this document. They also provided encouragement and teamwork, as well as significant creative support for the project.

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For news and information about TML+, please visit our Web site at  
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## 1. Introduction

This document is the User's Manual for the Tactical Medical Logistics (TML+) Planning Tool. This manual is for anyone who uses the TML+ software.

Before you read this manual you need to be comfortable working with the Microsoft Windows environment and its applications. For information about this, refer to the separate Microsoft Windows user documentation, including the Windows online Help system.

### 1.1 What Is TML+?

The Tactical Medical Logistics Planning Tool (TML+) is a software program designed for Navy and Marine Corps medical planners as a simulation tool that models the flow of patients from the point of injury (POI) through more definitive care, and an operations research tool that supports systems analysis, operational risk assessment, and field medical services planning.

TML+ incorporates extensive data for over 400 patient conditions and their corresponding medical treatment tasks, treatment times, equipment and consumable supplies, transportation assets, medical personnel and required skills, and levels of care. It employs a Monte Carlo method to simulate patient losses due to treatment delays and medical complications in order to assess the impact that resource limitations, system bottlenecks, skill limitations, and other factors have on them.

TML+ is a joint project between the Naval Health Research Center (NHRC) and Teledyne Brown Engineering (TBE). This project was sponsored by the Bureau of Medicine and Surgery and the Office of Naval Research.



TML+ is a versatile decision aid tool that can perform the following:

- Generate patient conditions for a patient stream in an identified theater.
- Prioritize treatment and evacuation of patients based on severity of injuries.
- Model mortality as killed in action, died of wounds as a function of complications, and died of wounds as a function of time.
- Simulate patient flow through a network of medical facilities, including arrival times, wait times, and treatment times.
- Offer the ability to build a generic treatment facility with user-defined medical capability and personnel assets.
- Model routing and utilization of transportation assets.
- Provide dynamic reports in graph and tabular formats that show medical treatment facility (MTF) status, patient disposition, and resource utilization.

Figure 1-1 displays a small sample scenario with patients flowing from four points of injury (POIs) to a Casualty Receiving and Treatment Ship (CRTS).

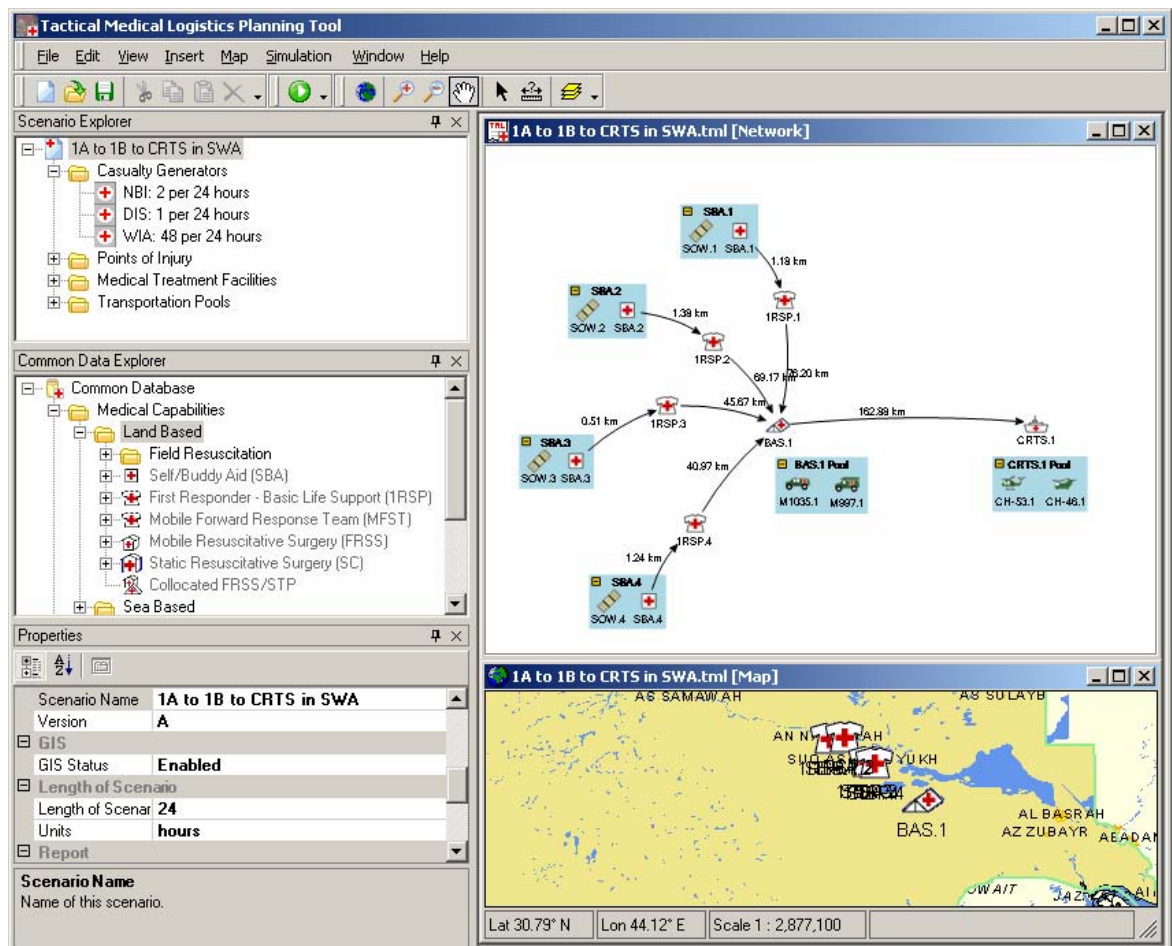


Figure 1-1 Tactical Medical Logistics Planning Tool



## 1.2 Uses for TML+

TML+ can help you identify the best course of action for an anticipated patient stream with projected assets.

You can use TML+ to determine:

- if a particular treatment facility can successfully handle a specific patient stream.
- how changing distances between treatment facilities with different capabilities affects patient treatment.
- which and how many supply, personnel, and transportation assets are utilized by an expected patient stream.
- if one treatment network (type, location, and number of assets) is more efficient for treating patients than another.

TML+ is a versatile tool that allows you to perform different types of planning:

- Deliberate planning: use TML+ before deployment to determine those medical assets and treatment networks that would optimally treat an expected patient stream.
- Crisis-action planning: use TML+ during deployment to reconfigure a treatment network in response to contingency events.
- Near real-time planning: use TML+ to track how patient treatment and evacuation events proceed as a mission is performed.

## 1.3 Casualty Flow Overview

TML+ simulates casualties/patients moving from one medical treatment facility (MTF) to another while competing with each other for scarce resources.

In Figure 1-2 a casualty “arrives” into the medical network at a randomly selected POI. Any casualty not killed in action (KIA) is immediately administered treatment by himself or a fellow warfighter (*buddy*) using the medical supplies available in his first-aid kit. This is known as Self-Buddy Aid (SBA).

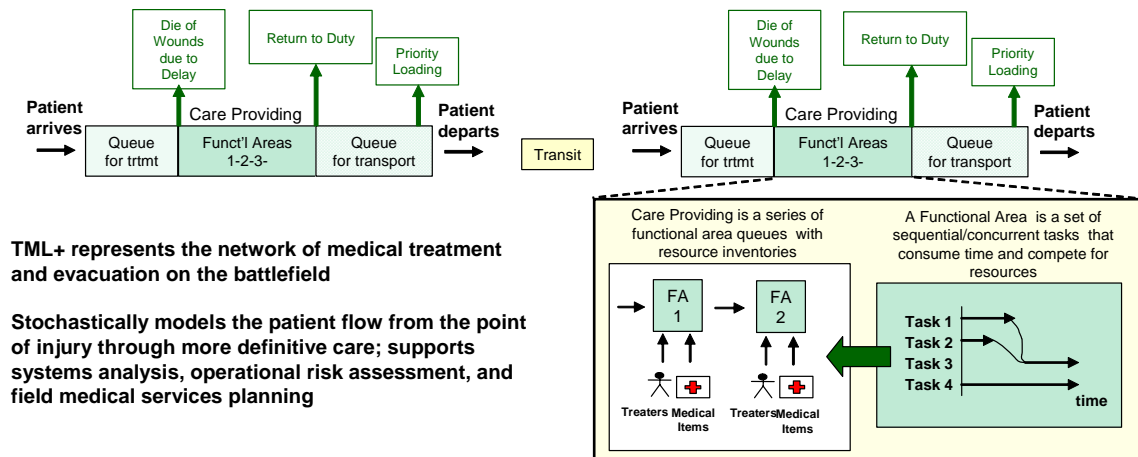


Figure 1-2 Overview of Casualty Flow



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Treatment is a series of medical tasks based on the casualty's patient condition (PC) code. A PC task profile consists of tasks and average task times, personnel required to perform the task, equipment required for the task, and consumables needed for the task.

Upon completion of treatment, the casualty *walks* or is *carried* to the next MTF in the medical laydown (typically a First Responder) designated for continued care. Upon entering any MTF, the patient is checked for death due to delay in treatment.

Since there are a finite number of corpsmen, some casualties must wait for treatment (*queue*) at the first responder facility. The first responder treats the casualty with his available medical supplies. No treatment is denied due to exhausted consumable medical supplies (a file is maintained as the program executes to keep track of how many consumables are demanded).

Upon completion of treatment, a patient is returned to duty (RTD), transferred to another functional area (FA), or evacuated to the next MTF. The next MTF provides the transportation for the patients. Each MTF has a pool of transporters. A transporter is requested for evacuated patients. Patients who need to be evacuated continue treatment until the transport arrives. Upon transport arrival, patients are loaded based on the severity of their injuries until transport capacity is reached, or a user-defined maximum time at the facility has elapsed. (The maximum time at the MTF has a default value defined for a litter-bound patient as the vehicle capacity times the loading time per casualty.) When the transport arrives at the next MTF, patients are unloaded based on injury severity then queued to receive treatment.

A patient flows through the network thus until death occurs or he is successfully treated. It should be noted that some patients may still remain in the system at the end of the scenario due to task or transportation time and resource constraints.





## 2. Understanding TML+ Concepts

Like most tools, to really learn how TML+ works there are some underlying concepts that you need to understand first. Even if you're familiar with other medical planning tools, TML+ has some unique concepts behind it.

This Chapter explains those concepts, so that you're best prepared to learn the *How To Use TML+* information later in this manual.

### 2.1 What Are Scenarios in TML+?

In TML+, a **Scenario** contains your medical laydown and other related information about a particular concept or planning mission. It is a file (extension .tml) that you can place anywhere on your computer (provided you have access privileges) or share with colleagues.

Name ▲	Size	Type	Modified
 1A to 1B to CRTS in NEA.tml	29 KB	TML+ Scenario	1/16/2006 9:41 AM
 1A to 1B to CRTS in SWA.tml	21 KB	TML+ Scenario	1/18/2006 10:53 AM
 OIF1 Days 12-17.tml	48 KB	TML+ Scenario	1/17/2006 5:16 PM
 STOM with 2 FRSS.tml	27 KB	TML+ Scenario	1/16/2006 9:41 AM

### 2.2 Understanding the Objects of Your Scenario

With TML+, your scenario is built of "objects." This section helps you understand them better.

#### 2.2.1 Assembling Your Scenario

Creating a scenario in TML+ is like building with Lego bricks — you construct your scenario from many smaller pieces called "objects." There are different types of objects that have different functions (like a Lego roofing tile or corner brick).

#### 2.2.2 Reusing Objects

You can reuse some objects many times, in the same scenario or in many scenarios. When you change an object, your changes register instantly in each place the object is used. This saves you lots of time, guarantees consistency, and makes it far easier to maintain your scenario.



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### 2.2.3 Commonly Encountered Objects

These are the TML+ objects you will encounter most often:

- **Casualty Generators.** A stream of casualties/patients that arrives at a randomly generated time and location with randomly generated patient conditions.
- **Points of Injury (POIs).** The location at which casualties are wounded.
- **Medical Capabilities.** The fundamental capability of a medical asset, including types of patients that can be treated, personnel (doctors, nurses, etc) assigned, and equipment and consumables available. This object may be reused and customized.
- **Medical Treatment Facilities (MTFs).** A deployed medical capability. An MTF may have defined hours of operation, move from one location to another, and have evacuation assets.
- **Transportation Types.** The capabilities of an evacuation asset, including speed, capacity, loading/unloading times, and other time delays. This object may be reused and customized.
- **Transportation Assets.** A vehicle available for evacuating patients.
- **Routes.** An evacuation path from one MTF to another.

### 2.3 Naming Objects

Some TML+ objects must be uniquely named within similar objects. Objects that must have unique names include:



- Points of Injury (POIs). Name must be distinct from other POIs.
- Medical Capabilities. Name must be distinct from other medical capabilities.
- Medical Treatment Facilities (MTFs). Name must be distinct from other MTFs.
- Transportation Types. Name must be distinct from other transportation types.
- Transportation Pools. Name must be distinct from other transportation pools.
- Transportation Assets. Name must be distinct from other transportation assets.





## 2.4 Where Are the Results From a TML+ Run?

TML+ outputs raw results to a Microsoft Access database (extension .mdb). This database is known as the **Reports Database** because reports are built from these data. TML+ will create a Reports Database in the same folder in which the scenario is located. You determine the filename, and whether the file is overwritten each time you run your scenario...if not overwritten, a new Reports Database is created with each new run, and the filename is appended with the current date and time.

Name	Size	Type	Modified ▲
 1A to 1B to FRSS to CRTS.tml	13 KB	TML+ Scenario	1/17/2006 5:29 PM
 1A to 1B to FRSS to CRTS 2006-01-17 ~ 17.30.41.mdb	14,884 KB	Microsoft Office Access...	1/17/2006 5:32 PM

## 2.5 Why Do Casualties Proceed From POI to SBA to 1RSP?

All scenarios in TML+ assume that the surviving casualty proceeds from a point of injury immediately to Self/Buddy Aid (intuitively there is no distance relationship between POI and SBA). After finishing treatment at the SBA, the casualty “walks” (or is carried or dragged) to a First Responder (1RSP) location where additional medical intervention is applied.

## 2.6 Why Is the GIS Disabled?

The GIS (Geographical Information System) might be disabled because the evaluation period has expired (usually 60 days), or the scenario property **GIS Status** is set to Disabled. We have to maintain a count of the number of TML+ software applications distributed for licensing purposes.

If your evaluation period has expired, refer to the *How to Enable GIS* section.

To change the GIS status for your scenario, refer to the *Editing Scenario Properties* section.



## 3. Getting Help

This section describes how to get help when you have questions or problems using TML+.

### 3.1 Many Ways to Get Help

There are many ways to get help when you have questions or problems while working with TML+.

#### Help Yourself

Most people like to be able to find their own answers. It's often quicker than other ways, and it's usually more satisfying. There are a few options when you want to find the answers yourself. If you can't find the answer quickly, don't hesitate to ask us for help directly.

- Visit the TML+ home page at [www.nhrc.navy.mil/programs/tml](http://www.nhrc.navy.mil/programs/tml).
- Use the standard HTML Help system that ships with TML+.
- Use the TML+ Help Center...quick access to product documentation and multimedia tutorials.
- Use the product documentation...TML+ Methodology Manual, TML+ Release Notes, and Mortality Modeling in TML+.
- Use the multimedia tutorials...Overview Tutorial, Scenario Building Tutorial, and Reports Tutorial.
- Use the sample scenarios.

#### Ask Us for Help

We pride ourselves on our responsive, friendly support. If you have a question, problem, or suggestion about TML+, check our Web site at [www.nhrc.navy.mil/programs/tml](http://www.nhrc.navy.mil/programs/tml). Or feel free to email us at [tml@nhrc.navy.mil](mailto:tml@nhrc.navy.mil).



### 3.2 Using TML+'s HTML Help System

The TML+ HTML Help System contains most of the information you'll need to successfully work with TML+.

To access the HTML Help System, start TML+ and from the Main menu of TML+, choose **Help > Help Contents**. The HTML Help file opens, and the most recently viewed tab is shown first.

Find the information you need by:

- Using the **Contents** tab. Expand topics to find more information.
- Using the **Index** tab to find topics containing those terms that have been indexed.
- Using the **Search** tab to find all occurrences of a word in the Help file, no matter how trivial.

### 3.3 Using TML+'s Help Center

The TML+ Help Center contains links to the TML+ documentation, multimedia tutorials, and the TML+ Web site.

To access the HTML Help Center, start TML+ and from the Main menu of TML+, choose **Help > Help Center**.  
or From Windows...choose **Start > Programs > TML+ > Help Center**. *Note that tutorials are multimedia presentations that require audio.*

The Help Center window (see Figure 3-1) appears.

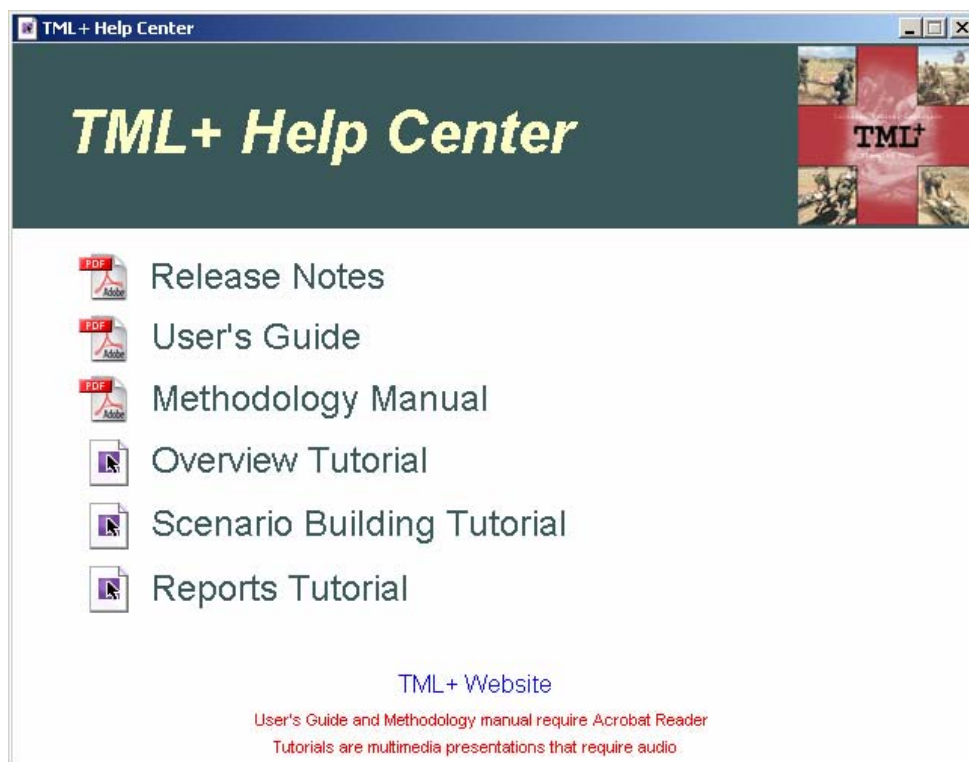


Figure 3-1 TML+ Help Center



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### 3.4 Using TML+'s Documentation

The TML+ Documentation set helps you better understand the TML+ application.

To access the documentation from Windows, choose **Start > Programs > TML+ > Documentation**. Select the documentation you wish to view. *Note that documentation requires Adobe Reader to view.*

The documents are:

- The **TML+ Release Notes**, which detail the hardware and software requirements for TML+ and list the new features and bug fixes.
- The **TML+ Methodology Manual**, which explains technical details of the simulation and data used by TML+.
- **Modeling Dynamic Casualty Mortality Curves in TML+**, which explains the approach used to determine an acceptable model for the mortality function in TML+.

### 3.5 Using TML+'s Tutorials

The TML+ Tutorials provide step-by-step instruction of TML+.

To access the tutorials, use the TML+ Help Center. *Note that tutorials are multimedia presentations that require audio.*

The tutorials are:

- The **TML+ Overview Tutorial**, which provides an overview of TML+ features.
- The **Scenario Building Tutorial**, which outlines how to build a scenario.
- The **Reports Tutorial**, which provides an overview of the various TML+ reporting features.





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### 3.6 Using Sample Scenarios

The sample scenarios that ship with TML+ provide an excellent resource for understanding how scenarios are built.

To access the sample scenarios from Windows, choose **Start > Programs > TML+ > Sample Scenarios**. Select the scenario you wish to open.

The sample scenarios are:

- **1A to 1B to CRTS in SWA (Southwest Asia)** scenario is set in Iraq with casualties—wounded in action (WIA), nonbattle injury (NBI), and disease (DIS)—arriving over 24 hours. The medical laydown has patients flowing from four points of injury (POIs) to a Casualty Receiving and Treatment Ship (CRTS).
- **1A to 1B to CRTS in NEA (Northeast Asia)** scenario is set along the 38th parallel with casualties (WIA, NBI, and DIS) arriving over 72 hours. The medical laydown has patients flowing from six POIs to a CRTS.
- **OIF1 Days 12-17** scenario is an illustrative Operation Iraq Freedom (OIF) medical laydown for Day 12 (03-30-03) thru Day 17 (04-04-03).
- **STOM with 2 FRSS** scenario is a future concept known as Ship to Objective Maneuver (STOM). One Forward Resuscitative Surgical System (FRSS) lands on the objective with a Vertical Maneuver Element (VME) while the second FRSS moves with a Surface Maneuver Element (SME). Casualties are based on historical data. Additionally, 2 mass casualty events are scheduled for the SME group and VME group, respectively.

## 4. Introducing the TML+ Interface

This chapter describes the work environment and the interface elements you will encounter while you're using TML+. The two interfaces that you need to be familiar with are the *Scenario Interface* and the *Reports Interface*.

### 4.1 Scenario Interface

The **Scenario Interface** (see Figure 4-1) helps you build and execute TML+ scenarios. The Scenario Interface has several components, which are described in this section:

- Network View
- Scenario Explorer
- Properties Window
- Main Menu Bar
- Map View
- Common Data Explorer
- Assumptions Window
- Toolbars

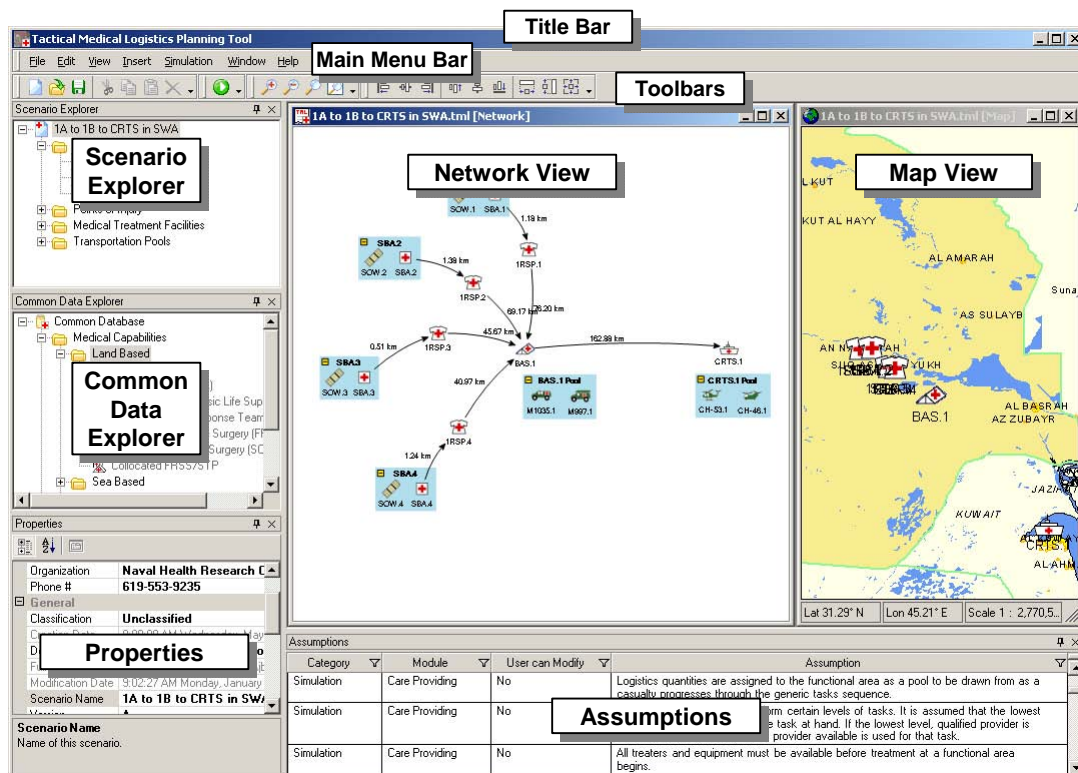


Figure 4-1 The Scenario Interface helps you build and execute TML+ scenarios

#### 4.1.1.1 The Network View

The **Network View** (see Figure 4-2) displays a graphical view of your scenario. Most of your scenario building will take place in the Network View. You drag and drop either medical capability or transportation types from the Common Data Explorer to create your scenario. You create evacuation routes by placing your mouse over an MTF until the cursor becomes a “hand” then click and drag a line to the receiving MTF. When an object is selected in the Network View, the object’s properties will be displayed in the Properties Window.

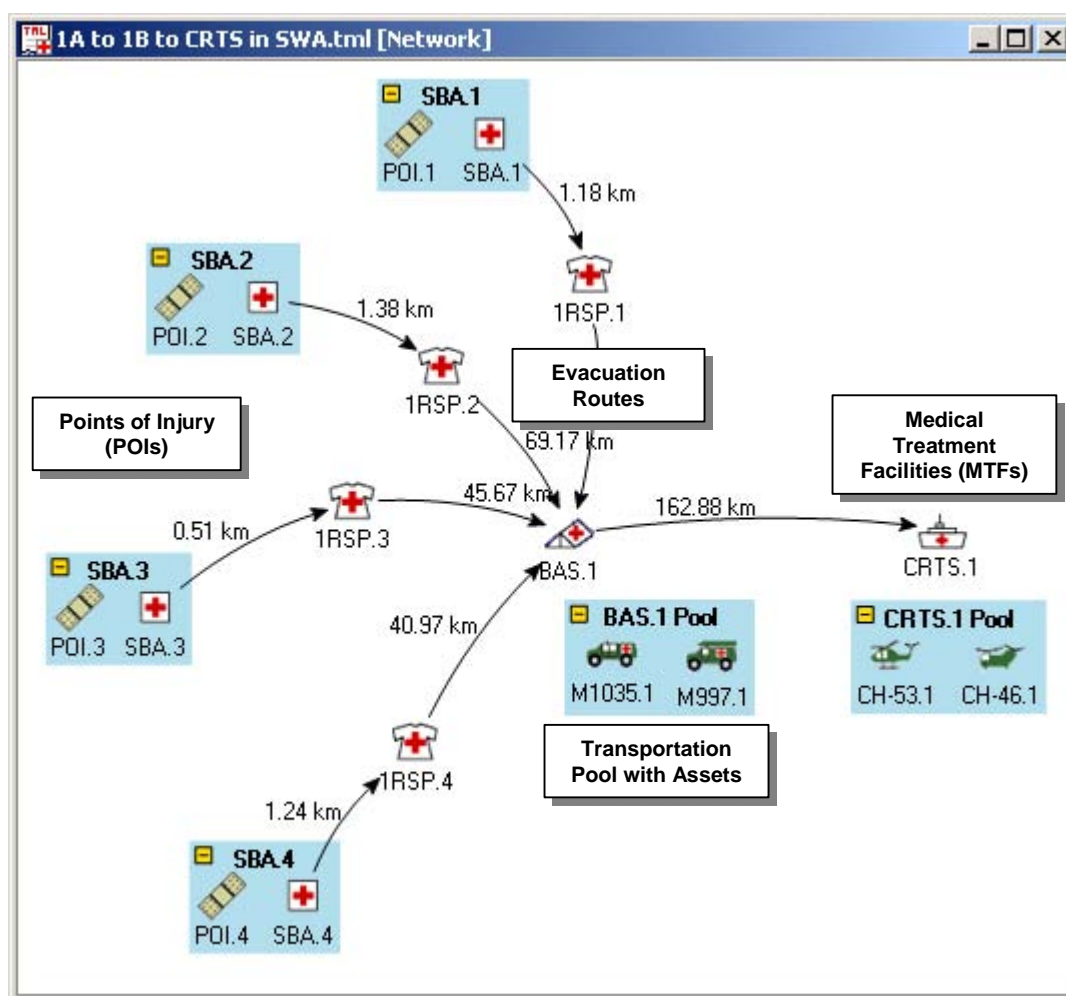


Figure 4-2 Network View



#### 4.1.2 The Map View

The **Map View** (see Figure 4-3) displays a geographical view of your scenario. Medical treatment facilities are positioned based on their latitude and longitude. You get a feel for the obstacles and terrain that affect your mission in this window. You can move an MTF by clicking and dragging it to a new location. Any evacuation routes attached to the MTF will have their distances automatically recomputed based on the great circle distance. When an MTF is selected in the Map View, its properties will be displayed in the Properties Window.

*Note that the Map View is only available when the Geographical Information System (GIS) is enabled.*

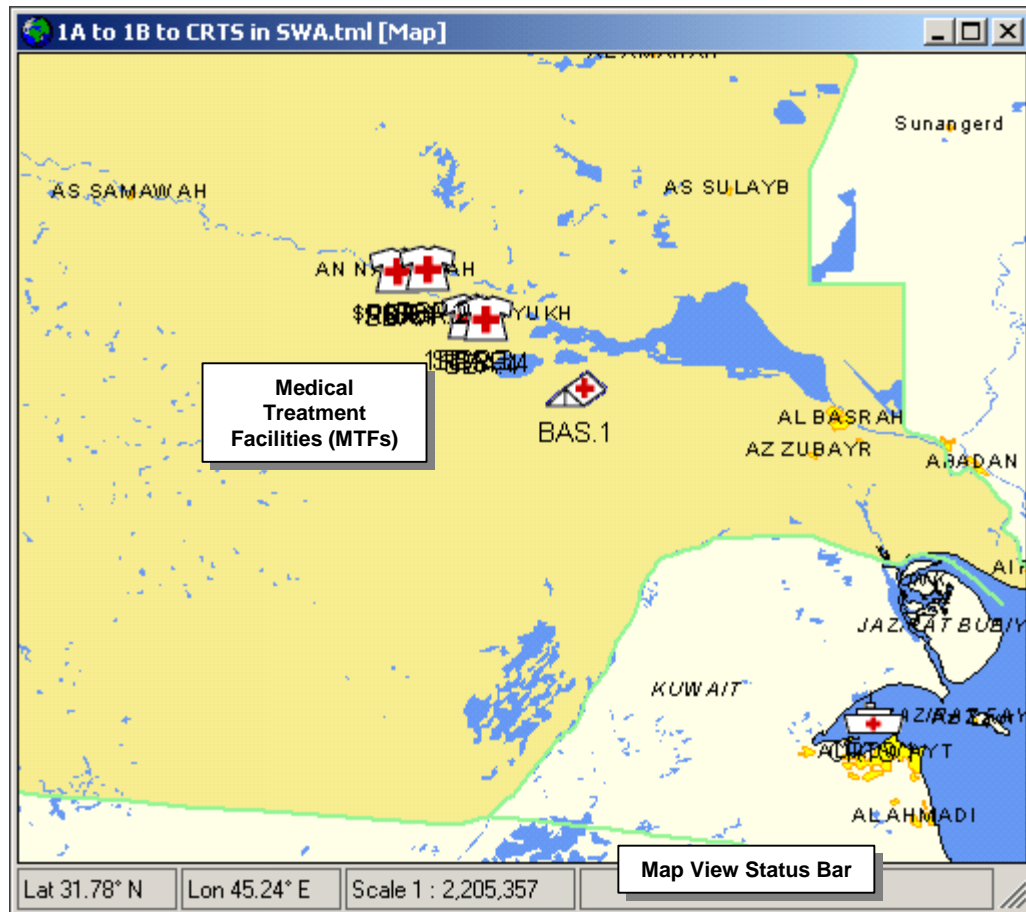
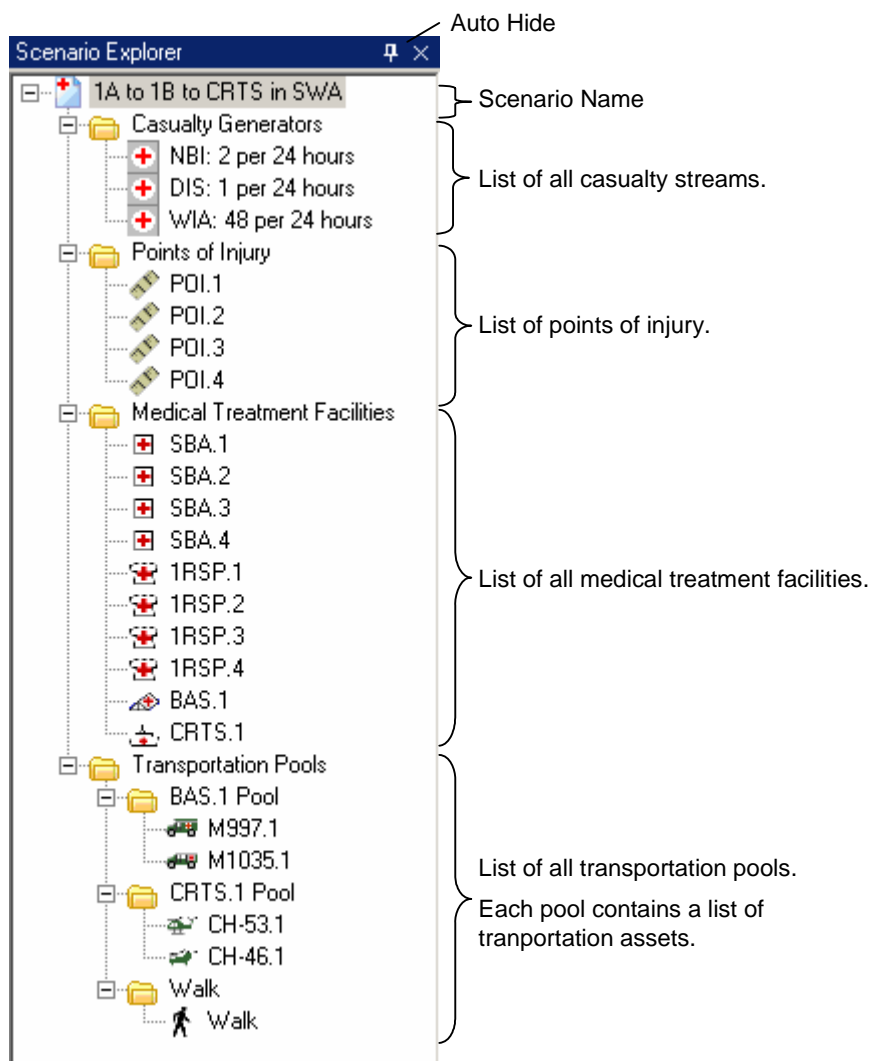


Figure 4-3 Map View

### 4.1.3 The Scenario Explorer

The **Scenario Explorer** (see Figure 4-4) contains the TML+ objects that define your scenario. Scenario objects may have additional properties that will be displayed in the Properties Window when the object is selected.



**Figure 4-4 Scenario Explorer**

The Scenario Explorer window is a “dockable” window that may be grouped or stacked so that it is selectable with a tab. Auto-hiding allows the Scenario Explorer to move out of the way when not needed and fly back out when desired.

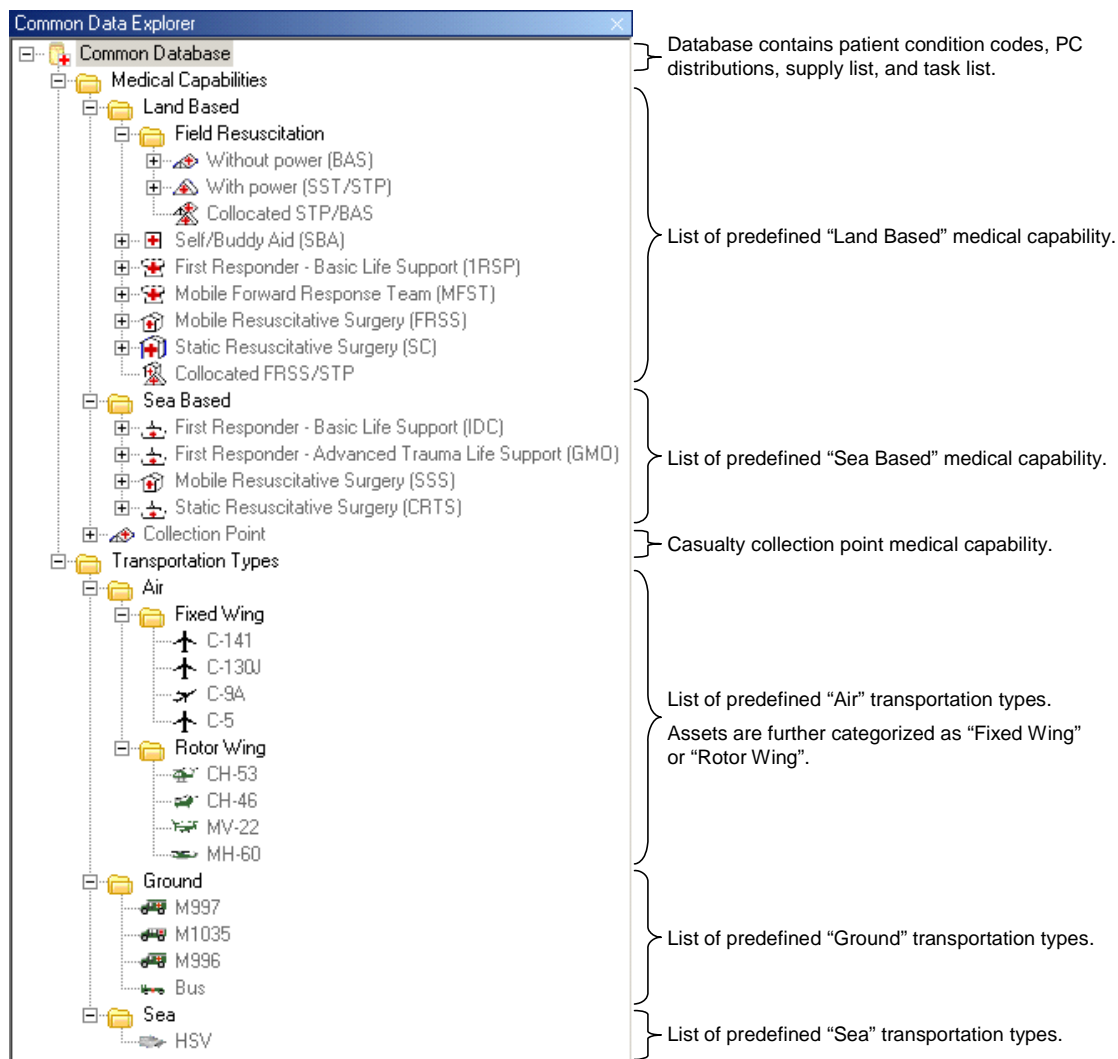




#### 4.1.4 The Common Data Explorer

The **Common Data Explorer** (see Figure 4-5) contains predefined medical capabilities and transportation types. You may drag and drop these objects onto the Network View to build your scenario. Common objects may have additional properties that will be displayed in the Properties Windows when the object is selected.

The Common Data Explorer also contains additional underlying data (e.g., PC codes and distributions, supply list, task list).



**Figure 4-5 Common Data Explorer**

The Common Data Explorer window is a "dockable" window that may be grouped or stacked so that it is selectable with a tab. Auto-hiding allows the Common Data Explorer to move out of the way when not needed and fly back out when desired.



#### 4.1.5 The Properties Window

The **Properties Window** (see Figure 4-6) displays information (or properties) associated with the *selected* TML+ object.

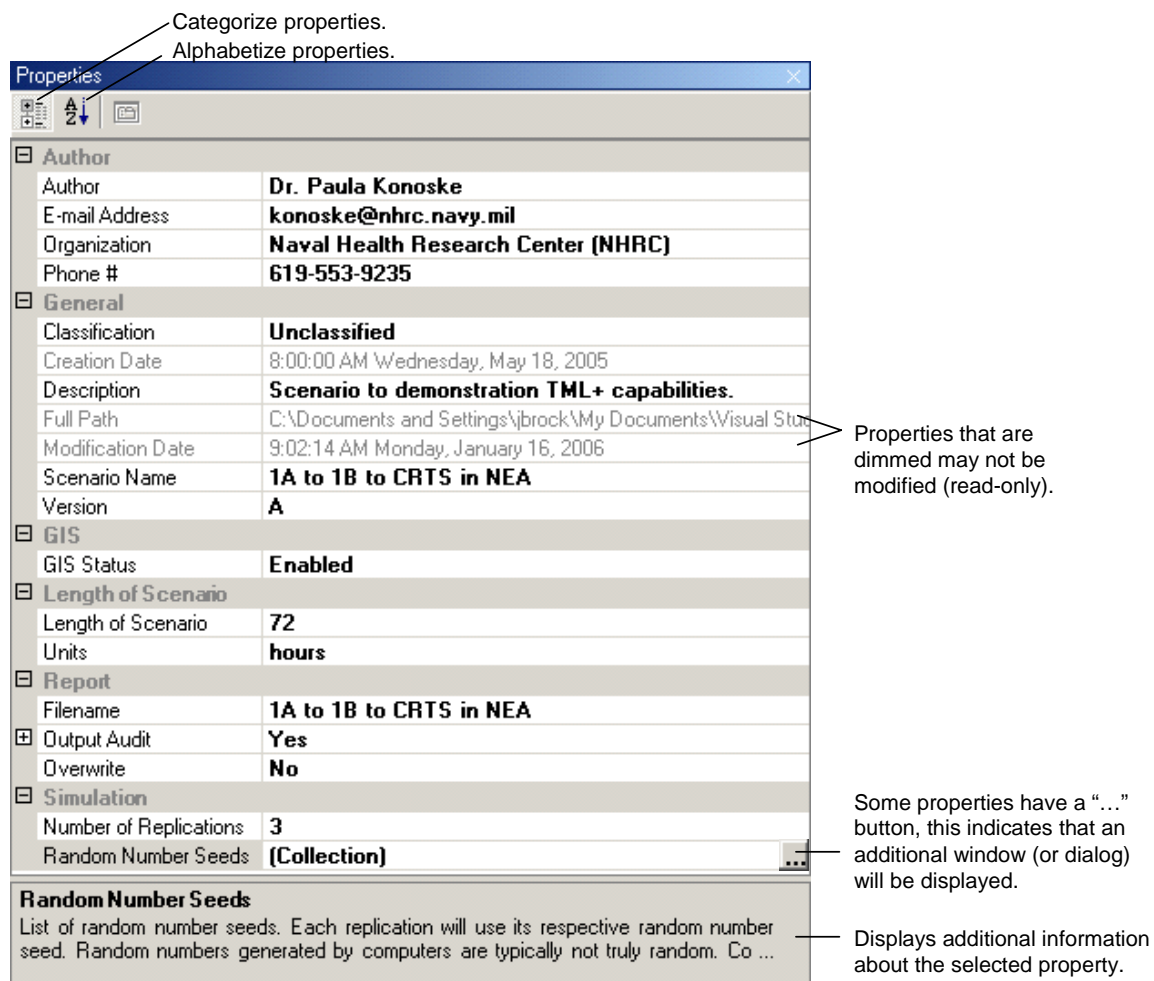


Figure 4-6 Properties Window

The Properties Window is a “dockable” window that may be grouped or stacked so that it is selectable with a tab. Auto-hiding allows the Properties Window to move out of the way when not needed and fly back out when desired.



#### 4.1.6 The Assumptions Window

The **Assumptions Window** (see Figure 4-7) lists the assumptions built into TML+. Each assumption is categorized (Simulation or Data), assigned a module (Casualty Estimation, Care Providing, or Transportation), and designated as modifiable by the end user.

Assumptions			
Category	Module	User can Modify	Assumption
Simulation	Care Providing	No	Priority is used for loading and unloading casualties on transports. Priority is also used for queuing casualties at functional area (deciding who gets treated first).
Simulation	Care Providing	Yes	Users can't change GTS, PC-task-equipment/consumable profiles, task times, PC rates, etc. Users can only change distribution of PC code by theater, personnel, quantities of individual consumables and equipment, number of AMALs in the inventory.
Simulation	Transportation	No	Casualties are always evacuated first from SBA to First Responder. (They can't jump over First Responder.)
Simulation	Transportation	No	Transportation asset is called when Task ID 278 Arrange for Patient Evacuation has completed for a patient when no current assets are en route. Subsequent patients completing Task 278 are assigned seats on the en route transportation asset until capacity is met.
Simulation	Transportation	Yes	Loading and unloading time is calculated per casualty and based on whether casualty is ambulatory or litter.

Figure 4-7 Assumptions Window

#### 4.1.7 The Main Menu Bar

The **Main Menu Bar** (see Figure 4-8) contains a number of menus that tell TML+ what to do. Each menu contains a list of commands and sometimes sub-menus. The menus shown depend on the context of the software.

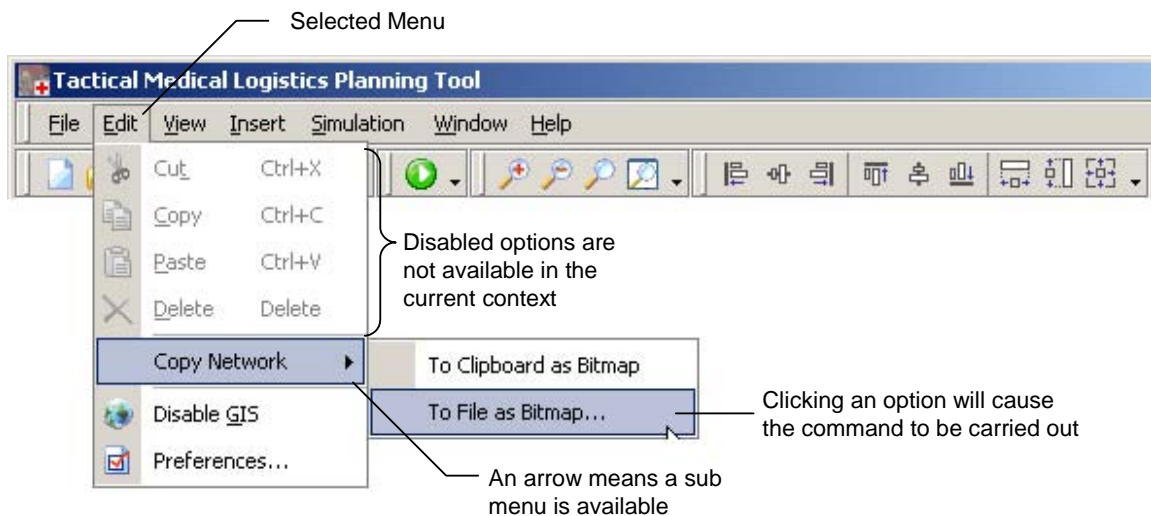


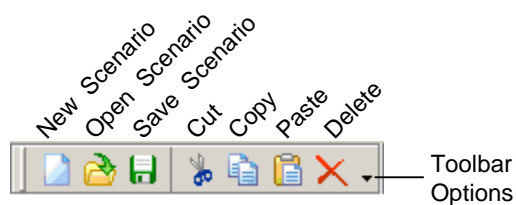
Figure 4-8 Menu Bar

Some of the options carry out commands immediately, and others display a window (dialog) so that you can enter additional information. If an option is followed by "...", it will display a window. Otherwise, the command is carried out immediately.



#### 4.1.8 The Standard Toolbar

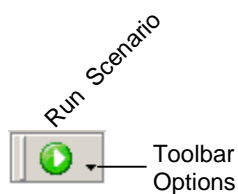
The **Standard Toolbar** gives you quick access to commonly used commands in the TML+ environment.



This Button	Does the Same as This	Shortcut
New Scenario	File > New	Ctrl + N
Open Scenario	File > Open...	Ctrl + O
Save Scenario	File > Save	Ctrl + S
Cut	Edit > Cut	Ctrl + X
Copy	Edit > Copy	Ctrl + C
Paste	Edit > Paste	Ctrl + V
Delete	Edit > Delete	Delete

#### 4.1.9 The Execute Toolbar

The **Execute Toolbar** allows you to quickly run the scenario.



This Button	Does the Same as This	Shortcut
Run Scenario	Simulation > Run	F5



#### 4.1.10 The Time Toolbar

The **Time Toolbar** allows you to control the current time of the scenario for editing.



MTFs that are not operational (unavailable) will be displayed with a dimmed icon. As the time changes, MTF locations will be updated in the Map View, and distances between MTFs will be updated in the Network View.

Figure 4-9 illustrates a sample scenario with the time set at 22 hours.

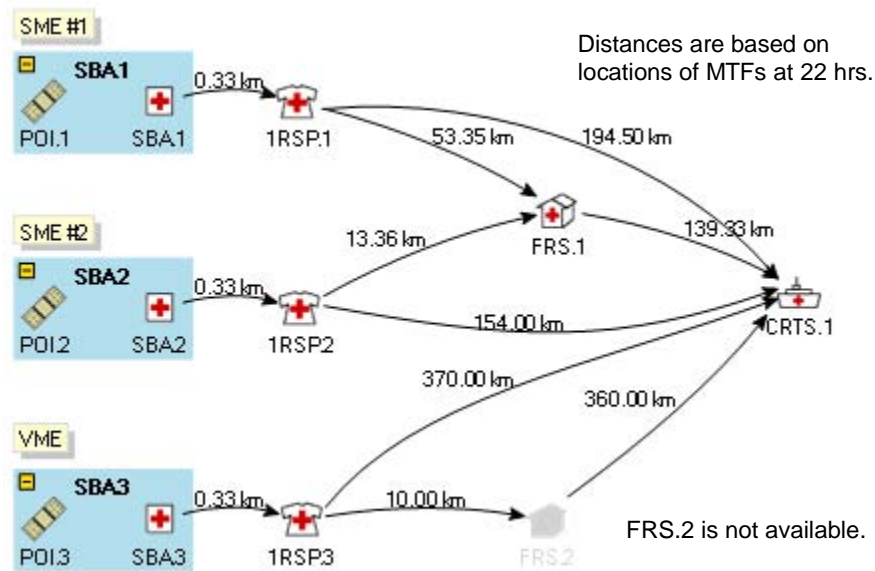
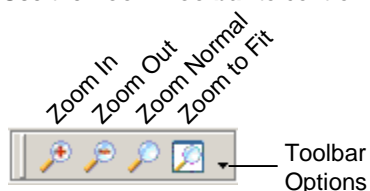


Figure 4-9 Sample scenario with time toolbar set to 22 hours



#### 4.1.11 The Zoom Toolbar (Network View)

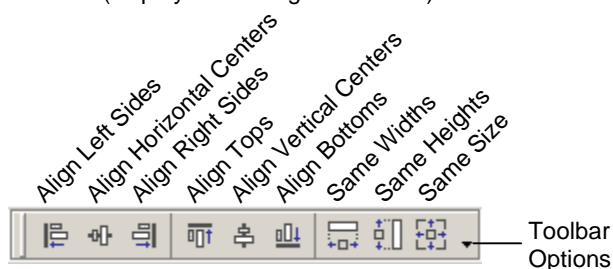
Use the **Zoom Toolbar** to control how large or small objects in the Network View are displayed.



This Button	Does This
Zoom In	Magnifies the size of the objects in the Network View.
Zoom Out	Shrinks the size of the objects in the Network View.
Zoom Normal	The objects will be displayed at their original size.
Zoom to Fit	Adjusts the magnification so that all the objects appear in the window.

#### 4.1.12 The Format Toolbar (Network View)

Use the **Format Toolbar** to align objects in the Network View. The first selected object is known as the primary selection (displayed with a green outline). The other selected objects are displayed with a blue outline.

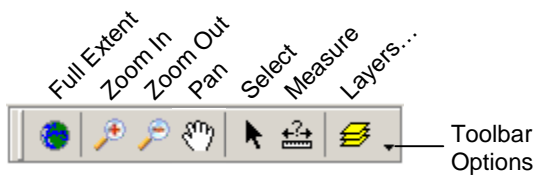


This Button	Does This
Align Left Sides	Aligns the left edges of all selected objects with the primary selection.
Align Horizontal Centers	Aligns the horizontal centers of all selected objects with the primary selection.
Align Right Sides	Aligns the right edges of all selected objects with the primary selection.
Align Tops	Aligns the top edges of all selected objects with the primary selection.
Align Vertical Centers	Aligns the vertical centers of all selected objects with the primary selection.
Align Bottoms	Aligns the bottom edges of all selected objects with the primary selection.
Same Widths	Makes the widths of all selected objects the same as the primary selection.
Same Heights	Makes the heights of all selected objects the same as the primary selection.
Same Size	Makes the size of all selected objects the same as the primary selection.



#### 4.1.13 The Map Tools Toolbar (Map View)

The **Map Tools Toolbar** gives you quick access to commonly used commands in the Map View.



This Button	Does The Same As This	Does This
Full Extent	Map > Full Extent	Includes all features in all map layers.
Zoom In	Map > Zoom In	Increases the map scale by a factor of two, centered on a point you click with the mouse. You can also zoom in by dragging a rectangle with the mouse.
Zoom Out	Map > Zoom Out	Decreases the map scale, centered on a point you click with the mouse.
Pan	Map > Pan	Changes the center of the map by dragging the mouse from one point to another.
Select	Map > Select	Changes the location of an MTF by selecting the object and dragging to a new location.
Measure	Map > Measure	Measures the distance by dragging a line and finishing with a double click. You can drag a multi-segment line.
Layers	Map > Layers...	Displays the map properties dialog.

#### 4.1.14 The Map View Status Bar

The **Map View Status Bar** at the bottom of the Map View window tells you about the current status of the map.

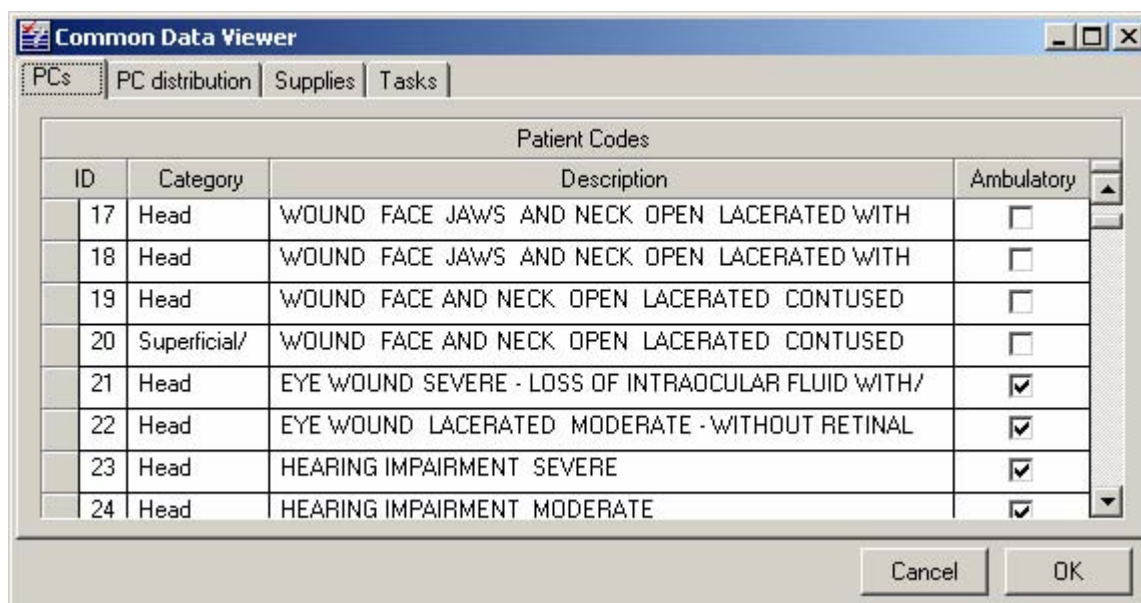
Latitude	Longitude	Map Scale Ratio	Distance
Lat 28.72° N	Lon 48.73° E	Scale 1 : 4,078,713	Distance 121.09 km

This	Tells You
Latitude	The latitude of the current mouse location.
Longitude	The longitude of the current mouse location.
Map Scale Ratio	Ratio of the size of the map in screen units and map units.
Distance	Great circle distance returned from the measure tool. Units depend on preference setting.



#### 4.1.15 The Common Data Viewer - Patient Condition Code Tab

The **PCs Tab** (see Figure 4-10) allows you to view all of the patient condition (PC) codes for TML+.



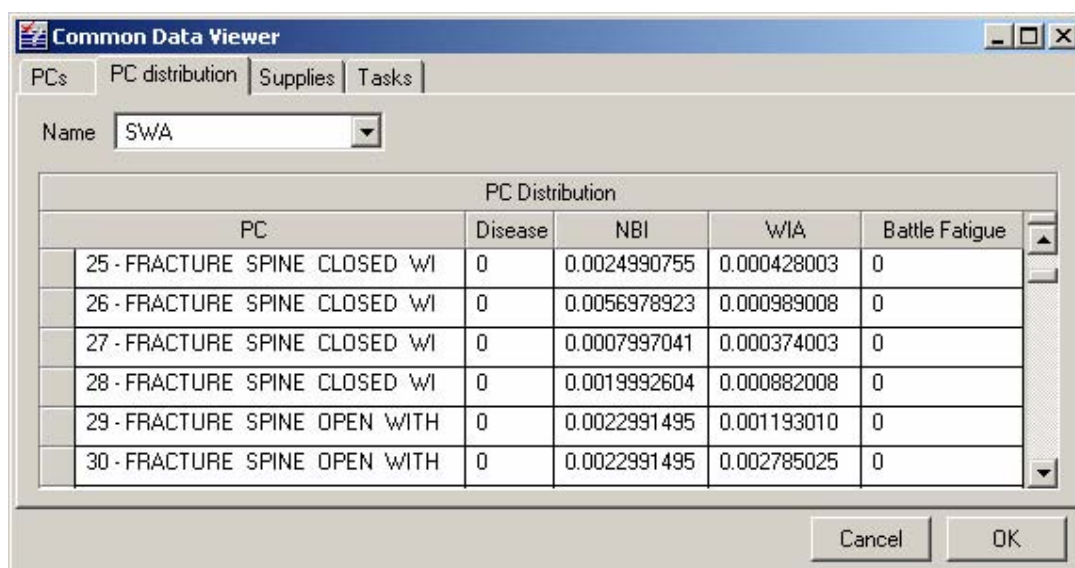
ID	Category	Description	Ambulatory
17	Head	WOUND FACE JAWS AND NECK OPEN LACERATED WITH	<input type="checkbox"/>
18	Head	WOUND FACE JAWS AND NECK OPEN LACERATED WITH	<input type="checkbox"/>
19	Head	WOUND FACE AND NECK OPEN LACERATED CONTUSED	<input type="checkbox"/>
20	Superficial/	WOUND FACE AND NECK OPEN LACERATED CONTUSED	<input type="checkbox"/>
21	Head	EYE WOUND SEVERE - LOSS OF INTRAOCULAR FLUID WITH/	<input checked="" type="checkbox"/>
22	Head	EYE WOUND LACERATED MODERATE - WITHOUT RETINAL	<input checked="" type="checkbox"/>
23	Head	HEARING IMPAIRMENT SEVERE	<input checked="" type="checkbox"/>
24	Head	HEARING IMPAIRMENT MODERATE	<input checked="" type="checkbox"/>

Figure 4-10 Common Data Viewer – PCs Tab

#### 4.1.16 The Common Data Viewer - PC Distribution Tab

The **PC Distribution Tab** (see Figure 4-11) allows you to view all of the PC distributions defined for TML+.

The PC distributions are named SWA, NEA, Europe, and OIF.



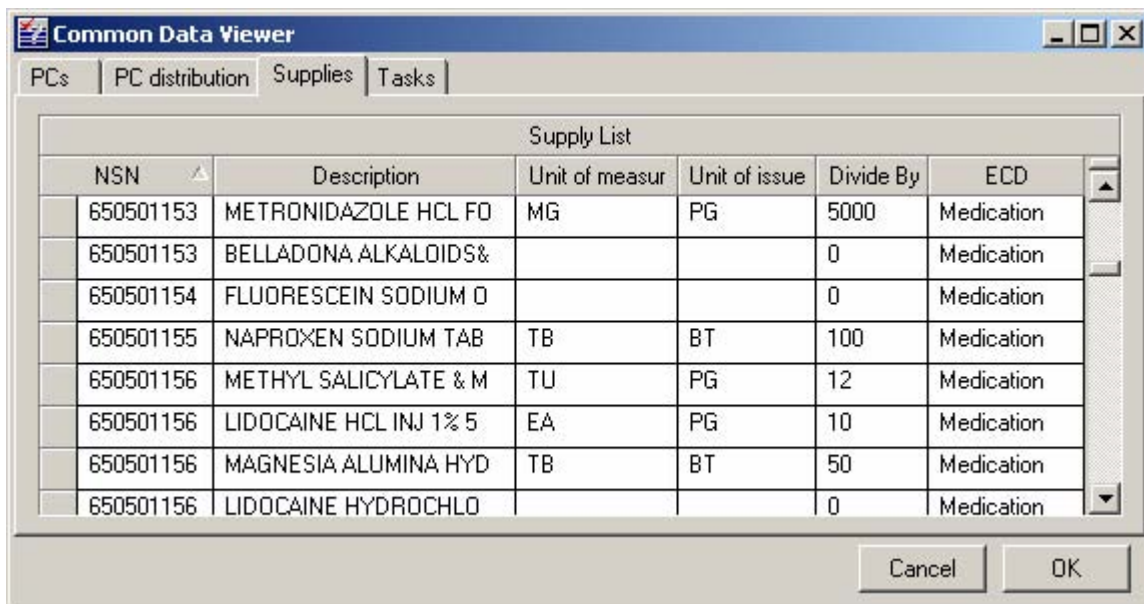
PC	Disease	NBI	WIA	Battle Fatigue
25 - FRACTURE SPINE CLOSED WI	0	0.0024990755	0.000428003	0
26 - FRACTURE SPINE CLOSED WI	0	0.0056978923	0.000989008	0
27 - FRACTURE SPINE CLOSED WI	0	0.0007997041	0.000374003	0
28 - FRACTURE SPINE CLOSED WI	0	0.0019992604	0.000882008	0
29 - FRACTURE SPINE OPEN WITH	0	0.0022991495	0.001193010	0
30 - FRACTURE SPINE OPEN WITH	0	0.0022991495	0.002785025	0

Figure 4-11 Common Data Viewer – PC Distribution Tab



#### 4.1.17 The Common Data Viewer – Supplies Tab

The **Supplies Tab** (see Figure 4-12) allows you to view all of the supplies defined for TML+.

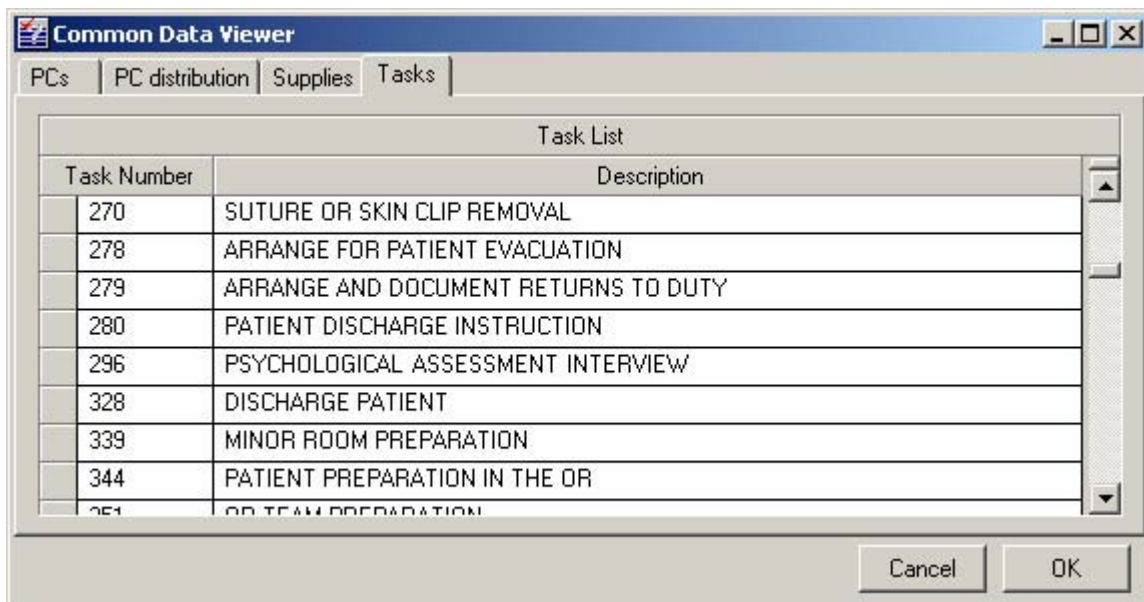


Supply List					
NSN	Description	Unit of measur	Unit of issue	Divide By	ECD
650501153	METRONIDAZOLE HCL FO	MG	PG	5000	Medication
650501153	BELLADONA ALKALOIDS&			0	Medication
650501154	FLUORESCEIN SODIUM O			0	Medication
650501155	NAPROXEN SODIUM TAB	TB	BT	100	Medication
650501156	METHYL SALICYLATE & M	TU	PG	12	Medication
650501156	LIDOCAINE HCL INJ 1% 5	EA	PG	10	Medication
650501156	MAGNESIA ALUMINA HYD	TB	BT	50	Medication
650501156	LIDOCAINE HYDROCHLO			0	Medication

Figure 4-12 Common Data Viewer – Supplies Tab

#### 4.1.18 The Common Data Viewer – Tasks Tab

The **Tasks Tab** (see Figure 4-13) allows you to view all of the medical tasks defined for TML+.



Task List	
Task Number	Description
270	SUTURE OR SKIN CLIP REMOVAL
278	ARRANGE FOR PATIENT EVACUATION
279	ARRANGE AND DOCUMENT RETURNS TO DUTY
280	PATIENT DISCHARGE INSTRUCTION
296	PSYCHOLOGICAL ASSESSMENT INTERVIEW
328	DISCHARGE PATIENT
339	MINOR ROOM PREPARATION
344	PATIENT PREPARATION IN THE OR
351	OR TEAM PREPARATION

Figure 4-13 Common Data Viewer – Tasks Tab

#### 4.1.19 The FA Common Data Viewer - General Properties Tab

The **General Tab** (see Figure 4-14) allows you to view general properties defined for a functional area (FA) and edit user-created medical capabilities.

FA Common Data - Battalion Aid Station

General | Inventory | Tasks/Usage | Treatment Priority/Percentages | GTS | Personnel

Descriptive Name  
Battalion Aid Station

Short Name  
1B

Service Discipline  
Priority

Max Casualties in FA  
999999

Max Simultaneous Tasks  
2

☐ Decrement supplies only

FA Routing

Task Number	To Functional Area	Reserve Spot In FA
278	Evac	<NONE>

Cancel OK

Figure 4-14 FA Common Data Viewer – General Tab

#### 4.1.20 The FA Common Data Viewer - Inventory Tab

The **Inventory Tab** (see Figure 4-15) allows you to view an inventory defined for an FA and edit user-created medical capabilities.

FA Common Data - Battalion Aid Station

General | Inventory | Tasks/Usage | Treatment Priority/Percentages | GTS | Personnel

Inventory Multipliers (applied when inventory is used by simulation)

Consumables 1 Equipment 1

Supply Inventory

Supply	Quantity Issued
Med - 1 - ACETAMINOPHEN TABLETS 0.325GM 1000S	2
Consum - 8 - ADHESIVE TAPE SURG 12INx5YDS MOLESKIN	2
Consum - 12 - AIRWAY KIT PERCUTANEOUS EMERGENCY ADULT 1S	1
Consum - 14 - AIRWAY NASOPHARYNGEAL ROBERTAZZI 30FR 12S	0.5

Cancel OK

Figure 4-15 FA Common Data Viewer – Inventory Tab



#### 4.1.21 The FA Common Data Viewer – Tasks/Usage Tab

The **Tasks/Usage Tab** (see Figure 4-16) allows you to view the tasks used for each PC for an FA. The task time is based on an exponential distribution using the input task time. The % Patient is used to randomly determine whether the task is performed for the patient. *Note that not all tasks are performed.*

PC	Task Number	Task Tim	Min Task Tim	Max Task Tim	% Patie	Init Tim	Recur
180	019 - EMERGENCY	5	4	12.5	100	1	0
180	022 - O2 ADMINISTR	2	1.6	5	75	1	0
180	023 - O2 ADMINISTR	0	0	0	75	1	0
180	024 - VITAL SIGNS	2	1.6	5	100	6	0

PC: 180 - MIW ABDOMEN AND LOWER LIMBS WITH FRACTURE AND NE

Figure 4-16 FA Common Data Viewer – Tasks/Usage Tab

#### 4.1.22 The FA Common Data Viewer – Treatment Priority/Percentages Tab

The **Treatment Priority/Percentages Tab** (see Figure 4-17) allows you to view the treatment priority and task percentages for an FA. The percentage is used to randomly determine whether the FA accepts the patient (based on PC).

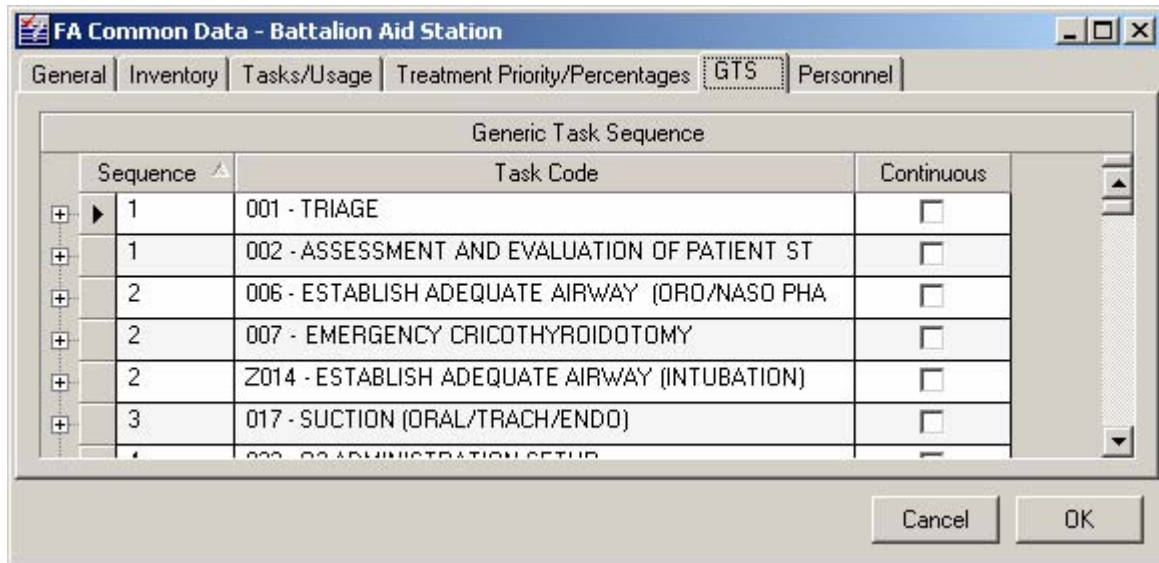
Description	Treatment Priority	Percent
171 - MIW CHEST WITH PNEUMOHEMOTHORAX AND LIMBS WIT	28	100
172 - MIW ABDOMEN WITH PENETRATING PERFORATING WOU	35	100
173 - MIW ABDOMEN WITH PENETRATING PERFORATING WOU	19	100
174 - MIW ABDOMEN WITH PENETRATING PERFORATING WOU	12	100
175 - MIW ABDOMEN AND LIMBS WITH PENETRATING PERFOR	13	100

Figure 4-17 FA Common Data Viewer – Treatment Priority/Percentages Tab



#### 4.1.23 The FA Common Data Viewer - GTS Tab

The **GTS Tab** (see Figure 4-18) allows you to view the Generic Task Sequence, or order, in which the tasks will be performed for an FA. *Note that not all tasks are performed.*



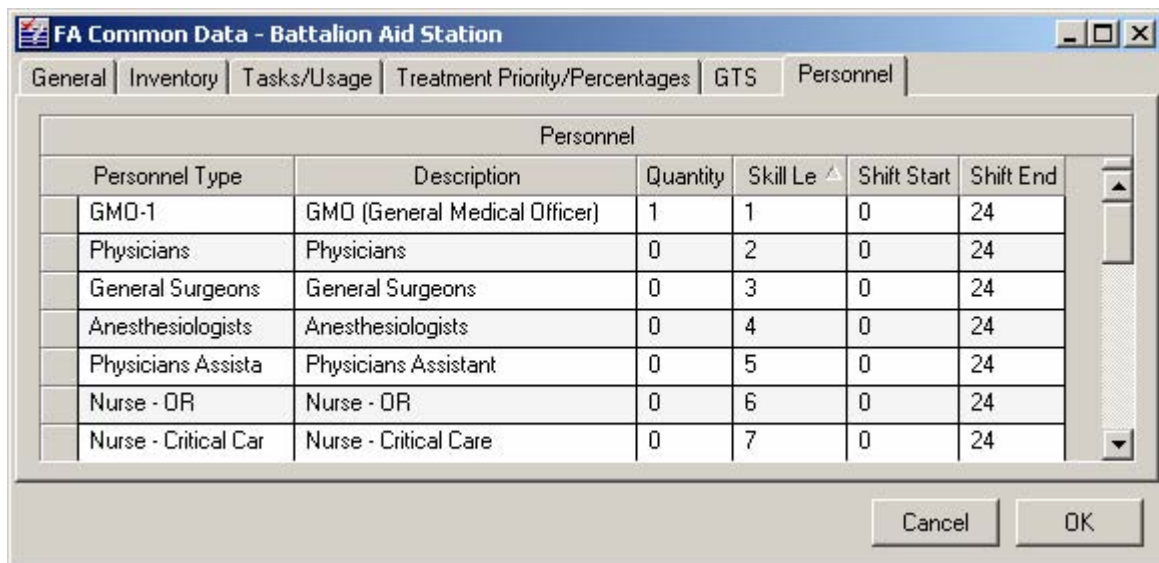
The screenshot shows the 'FA Common Data - Battalion Aid Station' window with the 'GTS' tab selected. The 'Generic Task Sequence' table is displayed with the following data:

Sequence	Task Code	Continuous
1	001 - TRIAGE	<input type="checkbox"/>
1	002 - ASSESSMENT AND EVALUATION OF PATIENT ST	<input type="checkbox"/>
2	006 - ESTABLISH ADEQUATE AIRWAY (ORO/NASO PHA	<input type="checkbox"/>
2	007 - EMERGENCY CRICOTHYROIDOTOMY	<input type="checkbox"/>
2	Z014 - ESTABLISH ADEQUATE AIRWAY (INTUBATION)	<input type="checkbox"/>
3	017 - SUCTION (ORAL/TRACH/ENDO)	<input type="checkbox"/>
4	022 - OR ADMINISTRATION SETUP	<input type="checkbox"/>

Figure 4-18 FA Common Data Viewer – GTS Tab

#### 4.1.24 The FA Common Data Viewer - Personnel Tab

The **Personnel Tab** (see Figure 4-19) allows you to view personnel available for an FA and edit user-created medical capabilities.



The screenshot shows the 'FA Common Data - Battalion Aid Station' window with the 'Personnel' tab selected. The 'Personnel' table is displayed with the following data:

Personnel Type	Description	Quantity	Skill Le	Shift Start	Shift End
GMD-1	GMD (General Medical Officer)	1	1	0	24
Physicians	Physicians	0	2	0	24
General Surgeons	General Surgeons	0	3	0	24
Anesthesiologists	Anesthesiologists	0	4	0	24
Physicians Assista	Physicians Assistant	0	5	0	24
Nurse - OR	Nurse - OR	0	6	0	24
Nurse - Critical Car	Nurse - Critical Care	0	7	0	24

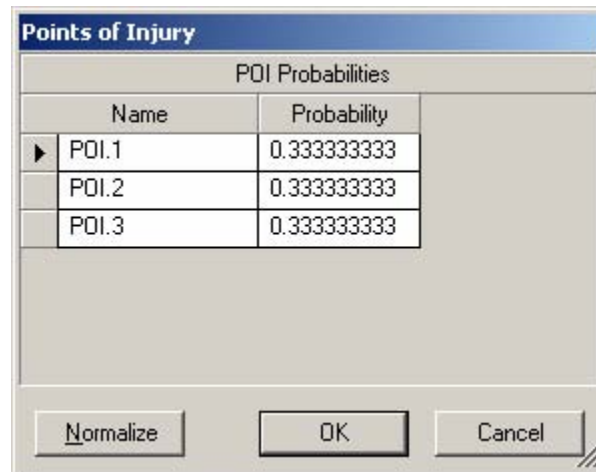
Figure 4-19 FA Common Data Viewer – Personnel Tab



#### 4.1.25 The Points of Injury Probabilities Editor

The **Points of Injury Probabilities Editor** (see Figure 4-20) allows you to revise ALL POI probabilities. The editor also provides a convenient **Normalize** button to quickly change all probabilities so that they sum to one.

*Note that that the probabilities must sum to one or an error will be issued upon executing the scenario.*



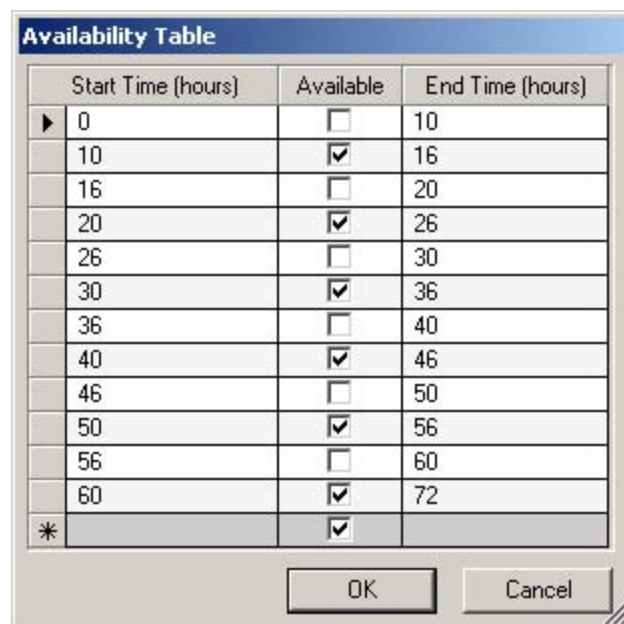
The dialog box titled "Points of Injury" contains a table labeled "POI Probabilities". The table has two columns: "Name" and "Probability". It lists three items: POI.1, POI.2, and POI.3, each with a probability of 0.33333333. Below the table are three buttons: "Normalize", "OK", and "Cancel".

Name	Probability
POI.1	0.33333333
POI.2	0.33333333
POI.3	0.33333333

Figure 4-20 POI Probabilities Editor

#### 4.1.26 The MTF Availability Editor

The **MTF Availability Editor** (see Figure 4-21) allows you to schedule those times that the MTF will be available.



The dialog box titled "Availability Table" contains a table with three columns: "Start Time (hours)", "Available", and "End Time (hours)". The table lists availability intervals from 0 to 72 hours in 10-hour increments. The "Available" column contains checkboxes, some of which are checked. A final row with an asterisk (\*) and a checked checkbox is also present. Below the table are two buttons: "OK" and "Cancel".

Start Time (hours)	Available	End Time (hours)
0	<input type="checkbox"/>	10
10	<input checked="" type="checkbox"/>	16
16	<input type="checkbox"/>	20
20	<input checked="" type="checkbox"/>	26
26	<input type="checkbox"/>	30
30	<input checked="" type="checkbox"/>	36
36	<input type="checkbox"/>	40
40	<input checked="" type="checkbox"/>	46
46	<input type="checkbox"/>	50
50	<input checked="" type="checkbox"/>	56
56	<input type="checkbox"/>	60
60	<input checked="" type="checkbox"/>	72
*	<input checked="" type="checkbox"/>	

Figure 4-21 MTF Availability Editor



#### 4.1.27 The Route Maneuver Editor

The **Route Maneuver Editor** (see Figure 4-22) allows you to simulate movement by varying the distances between MTFs. Simple linear interpolation is used to determine the distance between two entries. *Note that the Maneuver Table CANNOT be changed if the GIS is enabled. Use the Map View and the time toolbar to enter the necessary maneuver.*

Time (hours)	Distance (km, mi, nm)
0	0.01 km
6	0.01 km
19.99	93.33 km
20	0.01 km
29.99	66.67 km
30	0.01 km
39.99	66.67 km
40	0.01 km
49.99	66.66 km
50	0.01 km
56	21.66 km
59.99	21.66 km
60	10.00 km
*	

Figure 4-22 Route Maneuver Editor

#### 4.1.28 The MTF Future Waypoint Editor

The **MTF Future Waypoint Editor** (see Figure 4-23) allows you to enter the latitude and longitude of an MTF at specified times. The distance between any two MTFs can be determined by simple linear interpolation and the great circle distance algorithm. *Note that the Waypoint Table CANNOT be changed if the GIS is disabled.*

Time (hours)	Latitude (degrees N)	Longitude (degrees E)
0	36.9016668702225	-75.3013076356952
10	37.208633815618	-75.2092175520765
20	37.5872263816058	-75.1171274684579
30	38.0067478736463	-74.9943406902997
*		

Figure 4-23 MTF Future Waypoint Editor



#### 4.1.29 The Transportation Patient List Editor

The **Transportation Patient List Editor** (see Figure 4-24) allows you to select which patient condition (PC) codes (and patients) may request an evacuation asset. In addition, the editor allows you to select which patients may be loaded.

<input checked="" type="checkbox"/> Include	PC	Description	Mortality Risk	<input type="checkbox"/> Ambulatory	Category
<input checked="" type="checkbox"/>	170	MIW CHEST WITH PNEUMOHEMOTHORAX AND ABDOMEN WITH PENETRATING PERFORATING WOUND LIVER	High	<input type="checkbox"/>	Multiple Injury Wounds
<input checked="" type="checkbox"/>	171	MIW CHEST WITH PNEUMOHEMOTHORAX AND LIMBS WITH FRACTURE AND VASCULAR INJURY	High	<input type="checkbox"/>	Multiple Injury Wounds
<input checked="" type="checkbox"/>	172	MIW ABDOMEN WITH PENETRATING PERFORATING WOUND OF COLON AND BLADDER	Medium	<input type="checkbox"/>	Multiple Injury Wounds
<input checked="" type="checkbox"/>	173	MIW ABDOMEN WITH PENETRATING PERFORATING WOUND OF COLON AND SPLEEN	Medium	<input type="checkbox"/>	Multiple Injury Wounds
<input checked="" type="checkbox"/>	174	MIW ABDOMEN WITH PENETRATING PERFORATING WOUND OF COLON AND LIVER	High	<input type="checkbox"/>	Multiple Injury Wounds

OK Cancel

Figure 4-24 Transportation Patient List Editor



## 4.2 Reports Interface

The **Reports Interface** (see Figure 4-25) helps you analyze your scenario's output. The Reports Interface has several components, which are described in this section:

- Reports Explorer
- Properties Window
- Main Menu Bar
- Reports
- Consolidation Reports
- Toolbars

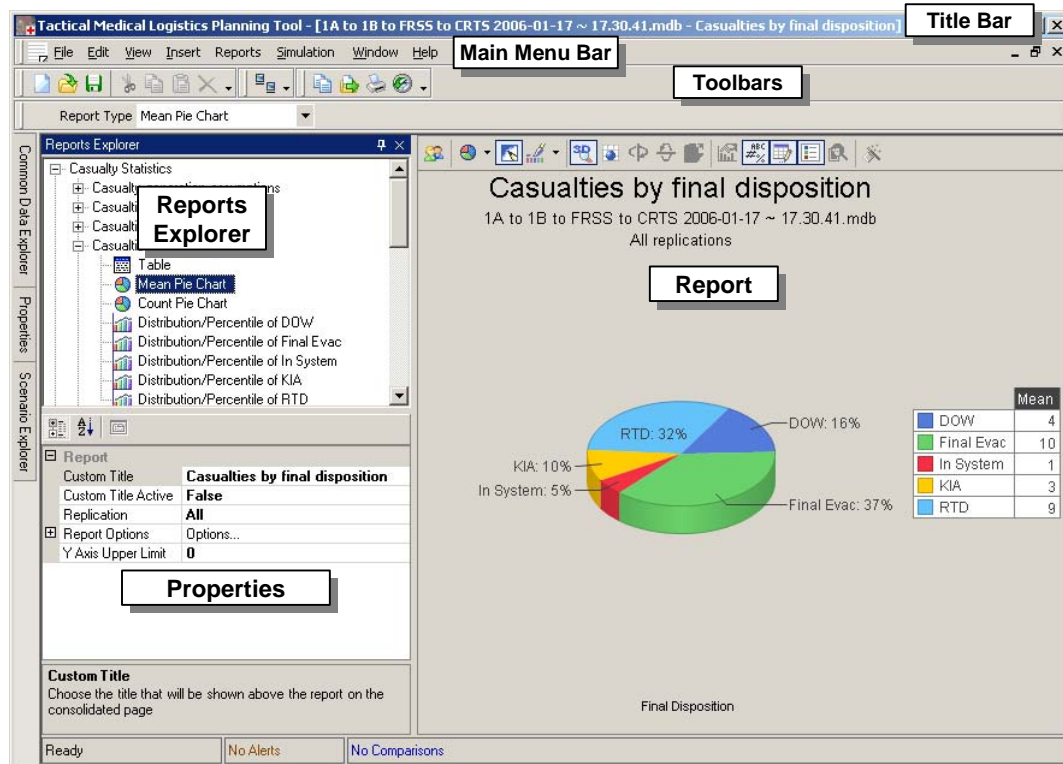
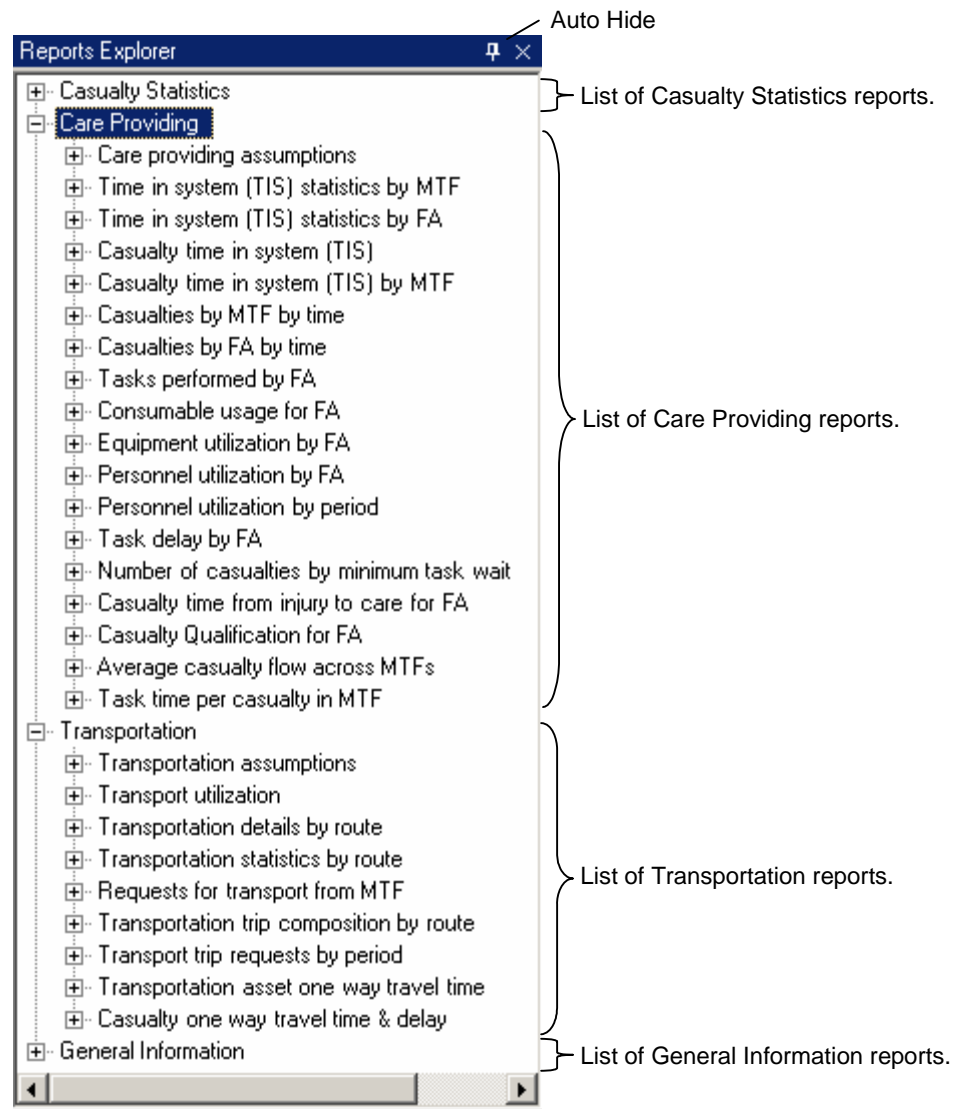


Figure 4-25 The Reports Interface helps you analyze your scenario's output



#### 4.2.1 The Reports Explorer

The **Reports Explorer** (see Figure 4-26) is the primary means of report navigation. Reports are grouped into four categories: Casualty Statistics, Care Providing, Transportation, and General Information. Each category is a folder in the Reports Explorer. In the diagram below, the Care Providing folder is open. All reports listed under the folder pertain to Care Providing. By opening a report folder, each available viewing format is listed. The report selected will be displayed in the Reports Window.



**Figure 4-26 Reports Explorer**

The Reports Explorer window is a “dockable” window that may be grouped or stacked so that it is selectable with a tab. Auto-hiding allows the Properties Window to move out of the way when not needed and fly back out when desired

#### 4.2.2.2 The Reports Window

The **Reports Window** displays the selected report from the Reports Explorer. Reports may be either tables (see Figure 4-27) or charts (see Figure 4-28).

Column Grouping.

Chart Title.

Drag a column header here to group by that column.

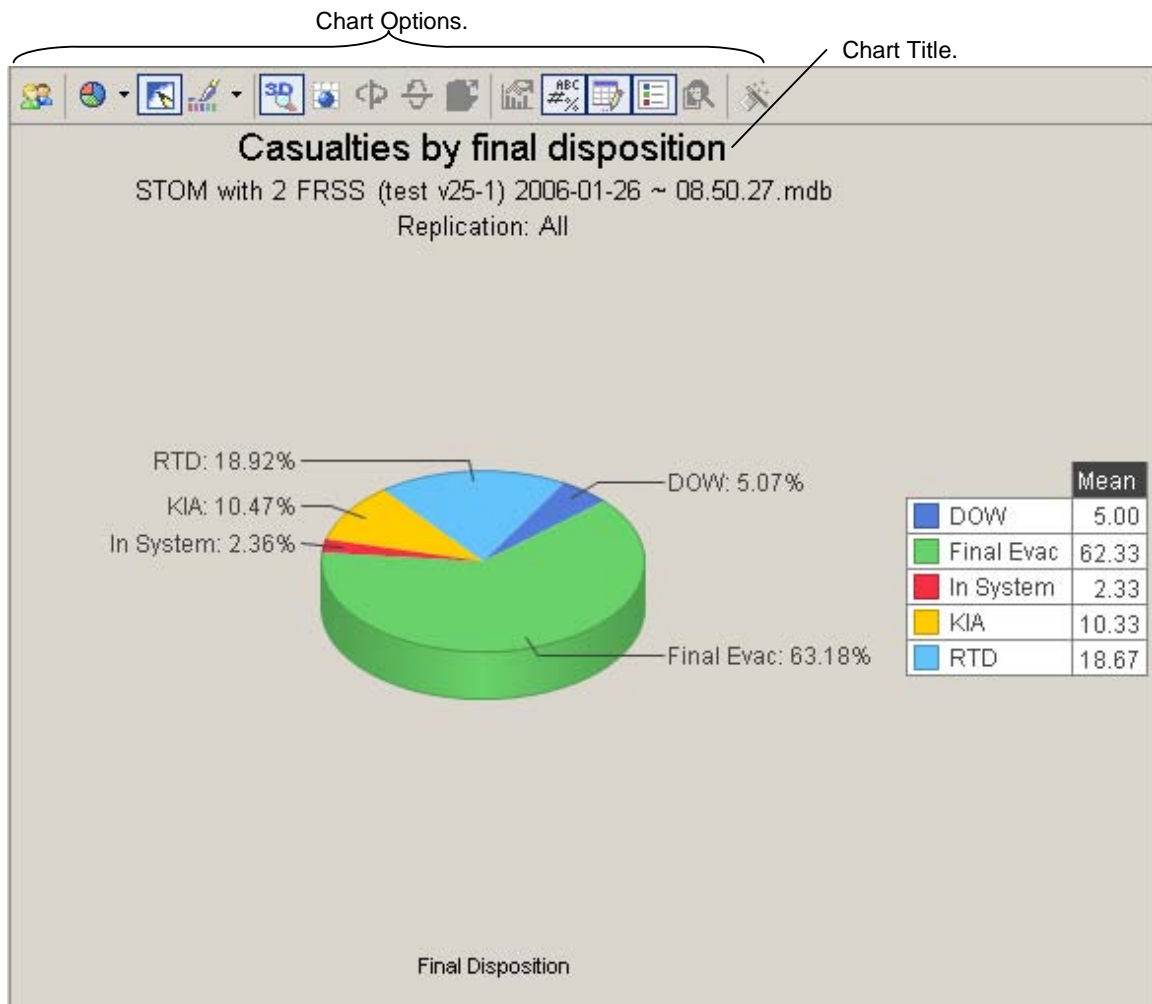
Sorting

Final Disposition	Mean	Std Dev	Min	Max
RTD	18.67	6.11	12	24
KIA	10.33	1.53	9	12
In System	2.33	1.53	1	4
Final Evac	62.33	5.13	58	68
DOW	5	1	4	6

Filter Data.

Selecting data for copy/paste or exporting.

**Figure 4-27 Casualties by Final Disposition table**



**Figure 4-28 Casualties by Final Disposition chart**



### 4.2.3 The Report Properties Window

The **Reports Properties Window** (see Figure 4-29) displays information (or properties) associated with the *selected* report. Properties vary, depending on the report selected and include things like Custom Title, and Report Options. All reports have a Report Type, and those with multiple replications have a Replication Number option.

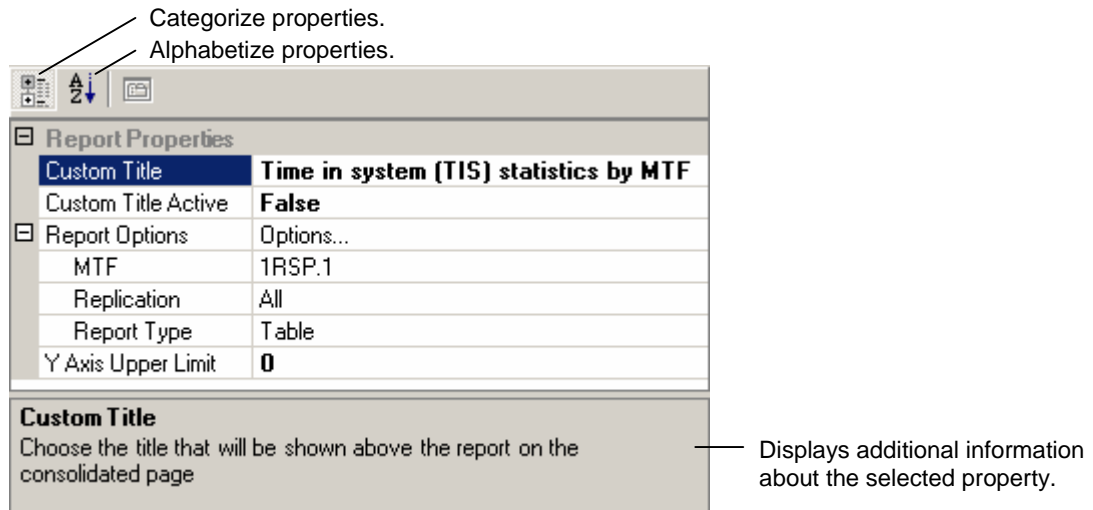


Figure 4-29 Report Properties Window

### 4.2.4 The Report Selection Toolbar

The **Report Selection Toolbar** (see Figure 4-30) provides an optional style of report navigation. You may choose a category and a report via convenient drop-down lists.

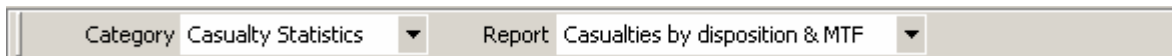


Figure 4-30 Report Selection Toolbar

### 4.2.5 The Report Options Toolbar

The **Report Option Toolbar** (see Figure 4-31) provides quick access to certain report options, such as replication, report type, MTF, FA, and Period of Time. The options on the Report Option Toolbar vary from report to report.

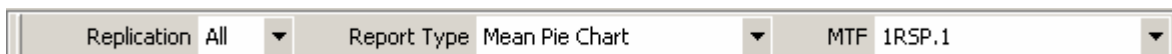
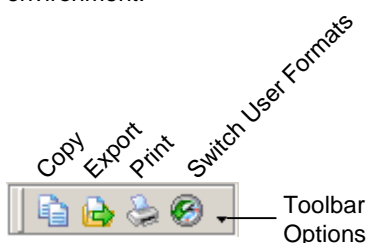


Figure 4-31 Report Option Toolbar



#### 4.2.6 The Report Standard Toolbar

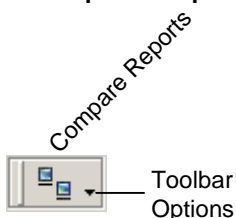
The **Report Standard Toolbar** gives you quick access to commonly used commands in the reporting environment.



This Button	Does This
Copy	Copies the report to the clipboard.
Export	Exports the report. Tables are exported as comma separated data files. Charts are exported as bitmap or windows metafiles.
Print	Prints the report. The size of the printout depends on the size of the displaying report window.
Switch User Formats	Switches between the two user-defined formats (available in Preferences).

#### 4.2.7 The Report Comparison Toolbar

The **Report Comparison Toolbar** allows you to quickly compare two or more scenario output data.

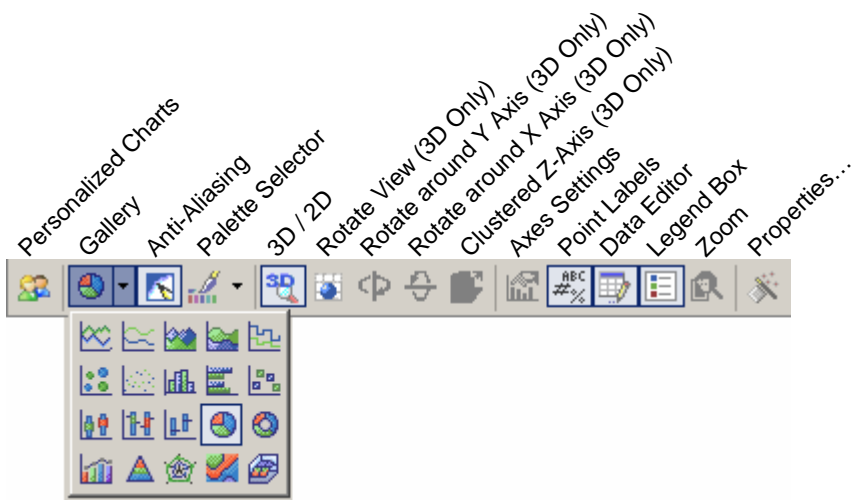


This Button	Does the Same as This	Does This
Compare Reports	Report > Compare Reports	Compares two or more scenario output data.



#### 4.2.8 The Charting Options Toolbar

The **Charting Options Toolbar** allows you to customize visual attributes of the chart.



This Button	Does This
Personalized Charts	Allows the user to save or load previous charts.
Gallery	Allows the user to select a new chart type.
Anti-Aliasing	Activates or disables anti-aliasing. Anti-aliasing removes the “jaggy” lines.
Palette Selector	Assigns selected color palettes to chart elements. Helps everything look consistent.
3D/2D	Makes the chart appear 3D or 2D.
Rotate View	Allows the user to rotate the view of the chart. Only applies to 3D charts.
Rotate Around Y Axis	Allows the user to rotate the view of the chart around the Y axis. Only applies to 3D charts.
Rotate Around X Axis	Allows the user to rotate the view of the chart around the X axis. Only applies to 3D charts.
Clustered (Z Axis)	Displays the chart as clustered; otherwise, the chart displays the series side by side.
Axes Setting	Allows the user to change axes properties.
Point Labels	Displays or hides the point labels.
Data Editor	Displays or hides the Data Editor.
Legend Box	Displays or hides the Legend Box.
Zoom	Enables or disables zooming.
Properties	Displays the Chart Properties dialog.

#### 4.2.9 The Report Alerts Editor

The **Report Alerts Editor** (see Figure 4-32) allows you to program TML+ to signal you when defined criteria occur in the reports. For example, if you want to know when consumable supplies are depleted, you can set an alert to highlight those cells in which the supply quantity is less than zero. Alerts may also be exported or loaded using the Alerts Editor.

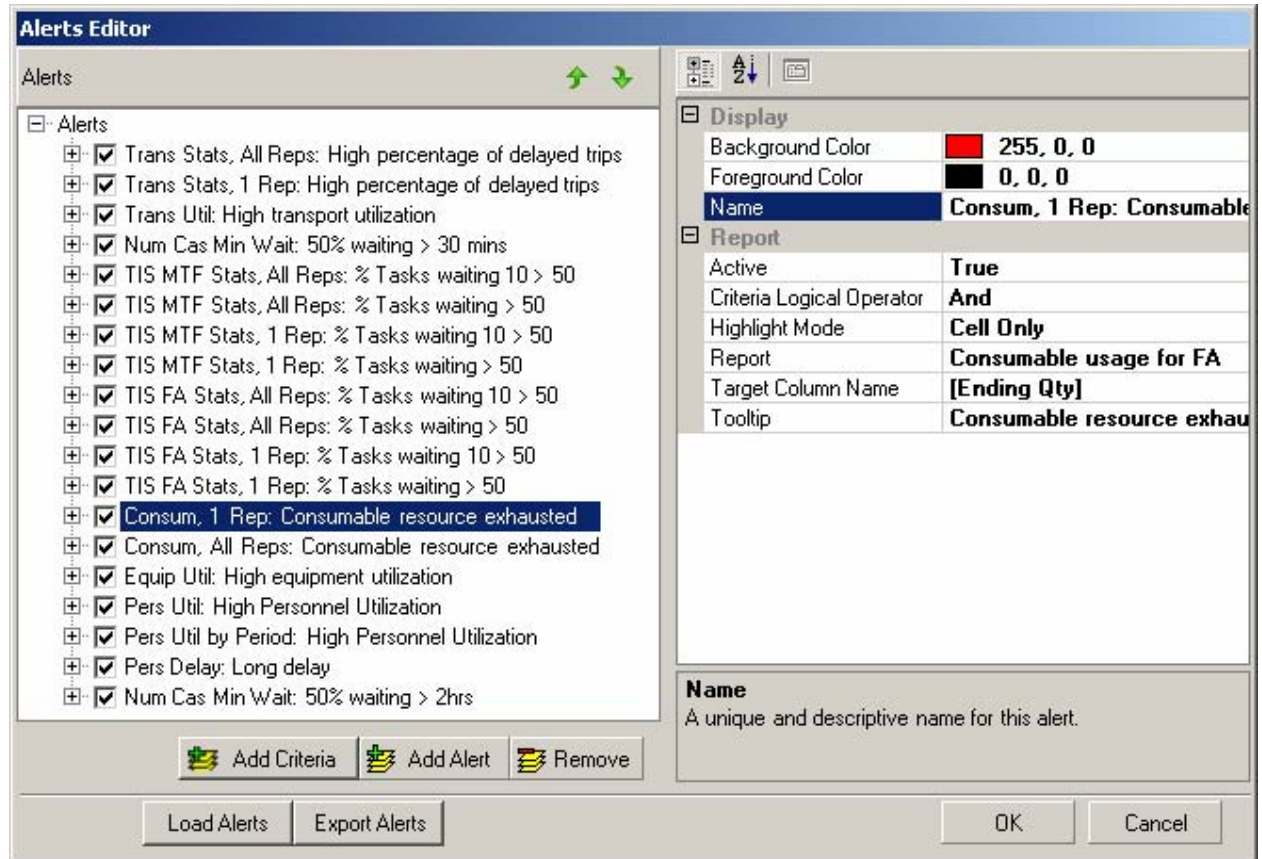


Figure 4-32 Report Alerts Editor



#### 4.2.10 The Consolidated Reports Editor

The **Consolidated Reports Editor** (see Figure 4-33) allows the user to combine a group of reports into one presentation. The consolidated reports may display either two or four reports per page. Consolidated Reports may be saved, loaded, and viewed.

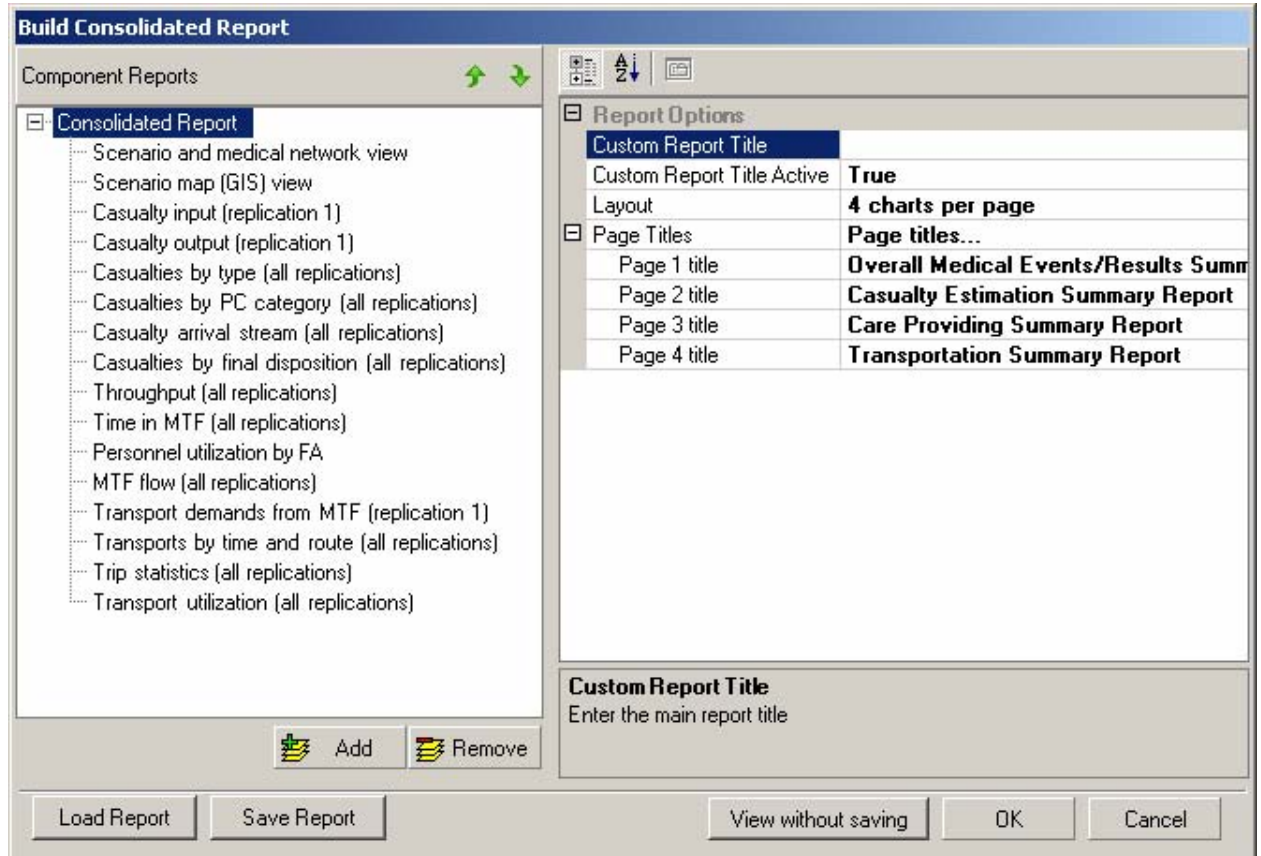


Figure 4-33 Consolidated Reports Editor





#### 4.2.11 The Report Comparison Editor

The **Report Comparison Editor** (see Figure 4-34) allows the user to compare results from one scenario run to results from other scenario runs. For example, if you are interested in learning whether including another transportation asset alleviates a delay in treatment, you can look at the “Task Time per Casualty in MTF” report before and after you add a transport asset to a scenario. The user selects the Comparison Database, the Color and the Replication number to compare to the current database.

Delete	Comparison Database	Short Name	Color	Replications
	C:\Program Files\NHRC\TML+\Scen	1A to 1B to CRTS	Blue	1
	C:\Program Files\NHRC\TML+\Scen	1A to 1B to CRTS	Crimson	1

Short identifier for main database: A to 1B to CRTS in NEA 2006-01-14 ~ 14.02.01.mdb

OK Cancel

Figure 4-34 Reports Comparison Editor

## 5. The Planning Process With TML+

TML+ basically works like this:

1. Start the TML+ application.
2. Select a defined scenario or create a new scenario.
3. Build your scenario laydown.
  - a. Enter the time period of your scenario in hours or days.
  - b. Create a stream (or streams) of casualties.
  - c. Create a medical network by dragging and dropping existing medical capabilities.
  - d. Create evacuation routes by drawing routes between MTFs. *Note that if the Map View is enabled, the route's distance is automatically computed.*
  - e. Add transportation assets by dragging and dropping existing transportation types onto the MTFs.
4. Execute the scenario.
5. View various output reports on casualty generation, care providing, and transportation.

If conducting sensitivity analysis:

1. Change a parameter.
2. Execute the scenario.
3. View various output reports on casualty generation, care providing, and transportation.
4. Compare the two runs.



## 6. How to Build TML+ Scenarios

A scenario is composed of four user-defined elements: Casualty Generators, Medical Treatment Facilities, Routes, and Transportation Assets. Each element must be added to the scenario and the appropriate properties edited.

### 6.1 Working With Scenarios

TML+ offers five preconfigured scenarios to assist the user in building a scenario:

1. First Responder (1RSP) to Battalion Aid Station (BAS) to Casualty Receiving Treatment Ship (CRTS)
2. First Responder to BAS to Surgical Company (SC) to CRTS
3. First Responder to BAS to Forward Resuscitative Surgical System (FRSS) to CRTS
4. First Responder to BAS/Shock Trauma Platoon (STP) to CRTS
5. First Responder to STP/FRSS to CRTS

Figure 6-1 shows an example of configuration 3 displayed in the Network View. The user can use one of the original five configurations or build on them by adding or modifying any of the four elements to represent more sophisticated and realistic treatment networks for various tactical scenarios. All configurations in TML+ assume the surviving casualty proceeds from a Point of Injury (POI), where Self-Buddy Aid (SBA) is received, to a First Responder location.

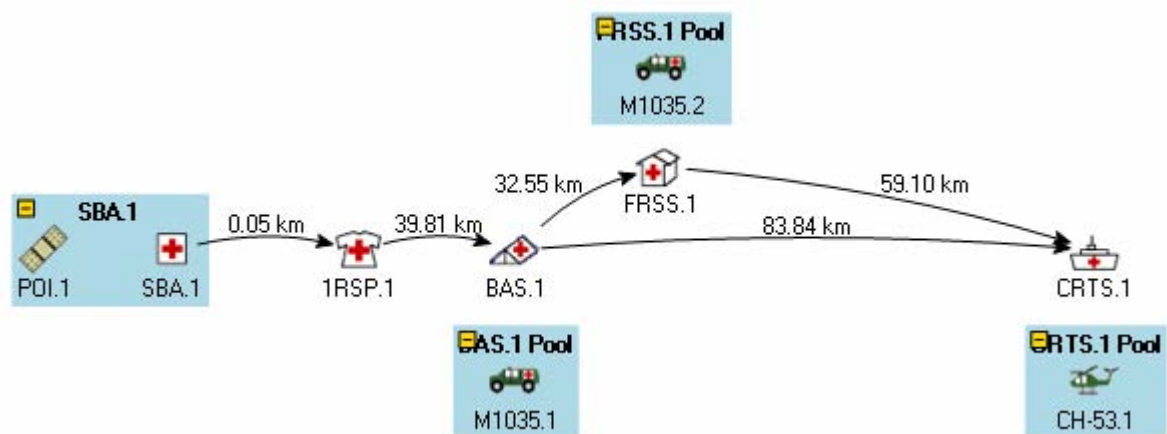



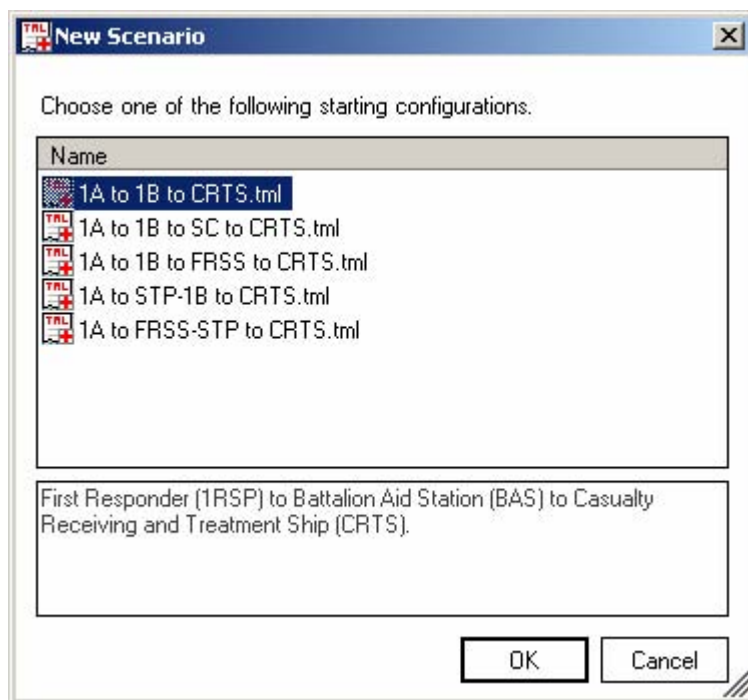
Figure 6-1 Preconfigured scenario with FRSS



### 6.1.1 Creating a New Scenario

1. From the Main menu, choose **File > New**.  
or From the Standard toolbar, click the  button.  
or Click the **CTRL+N** key.


The New Scenario dialog appears.



2. Select one of the starting configuration scenarios, and click the **OK** button.

TML+ opens the scenario and displays its contents in the various views.

### 6.1.2 Opening a Scenario

1. From the Main menu, choose **File > Open**.  
or From the Standard toolbar, click the  button.  
or Click the **CTRL+O** key.  
or From the Main menu, choose **File > Recent Scenarios**. Select the desired scenario.


The standard Open dialog appears.

2. Select the scenario you want to open from the browser, and click the **OK** button.

TML+ opens the scenario and displays its contents in the various views.



### 6.1.3 Saving a Scenario

1. From the Main menu, choose **File > Save**.  
or From the Standard toolbar, click the  button.  
or Click the **CTRL+S** key.

The scenario contents will be saved to the file.

If you are in a new scenario that has not yet been saved, the standard **Save As** dialog appears.

- a) Navigate to where you would like to save your scenario.
- b) Enter the file name and click Save.

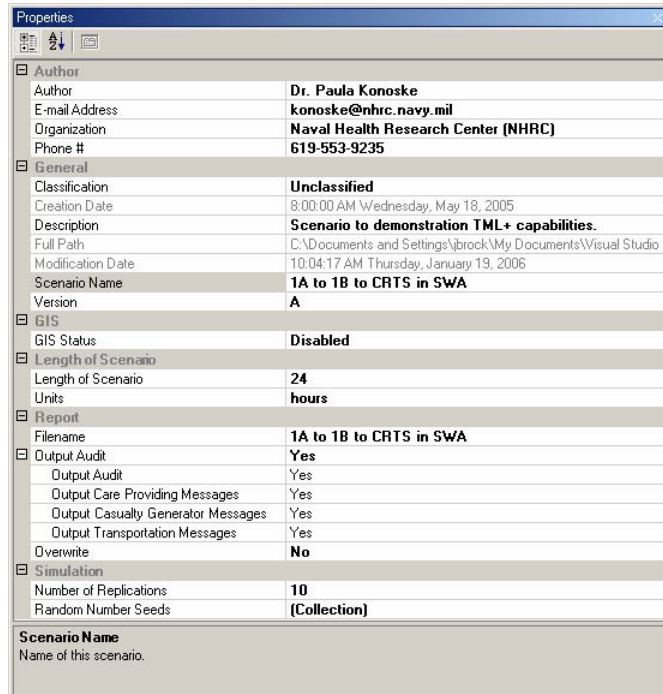
### 6.1.4 Deleting a Scenario

TML+ creates a separate .tml file for each scenario. You can delete the scenario using Windows Explorer.

1. Open Windows Explorer.
2. Navigate to the folder that contains the TML scenario you want to delete.
3. Right-click the scenario icon and click **Delete**.

### 6.1.5 Editing a Scenario's Properties

The properties of a scenario may be changed via the Properties Window. Refer to *The TML+ Objects* chapter for detailed information regarding each property.



Properties	
<b>Author</b>	
Author	Dr. Paula Konoske
E-mail Address	konoske@nhrc.navy.mil
Organization	Naval Health Research Center (NHRC)
Phone #	619-553-9235
<b>General</b>	
Classification	Unclassified
Creation Date	8:00:00 AM Wednesday, May 18, 2005
Description	Scenario to demonstration TML+ capabilities.
Full Path	C:\Documents and Settings\brock\My Documents\Visual Studio P
Modification Date	10:04:17 AM Thursday, January 19, 2006
Scenario Name	1A to 1B to CRTS in SWA
Version	A
<b>GIS</b>	
GIS Status	Disabled
<b>Length of Scenario</b>	
Length of Scenario	24
Units	hours
<b>Report</b>	
Filename	1A to 1B to CRTS in SWA
<b>Output Audit</b>	
Output Audit	Yes
Output Care Providing Messages	Yes
Output Casualty Generator Messages	Yes
Output Transportation Messages	Yes
Overwrite	No
<b>Simulation</b>	
Number of Replications	10
Random Number Seeds	(Collection)
<b>Scenario Name</b>	
Name of this scenario.	



---

#### 6.1.6 Print Previewing the Network View of a Scenario

1. Make the Network View active by clicking anywhere in the Network View window.  
or From the Main menu, choose **View > Network**.
2. From the Main menu, choose **File > Print Preview**.  
The standard Print Preview dialog appears.

#### 6.1.7 Printing the Network View of a Scenario

1. Make the Network View active by clicking anywhere in the Network View window.  
or From the Main menu, choose **View > Network**.
2. From the Main menu, choose **File > Print**.  
or Click the **CTRL+P** key.

The standard Print dialog appears.

3. Modify the print parameters as needed, and click the **OK** button.

The Network View will be printed.

#### 6.1.8 Print Previewing the Map View of a Scenario

*The Map View is only displayed if the GIS is enabled.*

1. Make the Map View active by clicking anywhere in the Map View window.  
or From the Main menu, choose **View > Map**.
2. From the Main menu, choose **File > Print Preview**.  
The standard Print Preview dialog appears.

#### 6.1.9 Printing the Map View of a Scenario

1. Make the Map View active by clicking anywhere in the Map View window.  
or From the Main menu, choose **View > Map**.
2. From the Main menu, choose **File > Print**.  
or Click the **CTRL+P** key.

The standard Print dialog appears.

3. Modify the print parameters as needed, and click the **OK** button.

The Map View will be printed.



---

## 6.2 Working With Casualty Generators

TML+ offers three ways to generate casualties — repeatable rates, table rates, and user-defined rates.

### 6.2.1 Adding a Repeatable Rate Casualty Generator

The rate option is suggested if you want to generate a steady casualty stream of one or more casualty type: wounded in action (WIA), disease (DIS), or nonbattle injury (NBI).

The rate you enter in this generator is repeated until the end of the scenario. For example, if you enter a rate of 10 WIAs every 24 hours for a 72-hour scenario, the rate is repeated 3 times and approximately 30 casualties are stochastically generated.

1. From the Main menu, choose **Insert > Casualty Generator > Insert Rate**.  
or Click the casualty generator folder in the Scenario Explorer with the right mouse button to obtain the context menu, select **Insert Rate**.

A casualty generator titled “CG Rate” will be added to the Casualty Generator folder in the Scenario Explorer.

### 6.2.2 Adding a Casualty Table

The Casualty Table option is suggested if you want to model a pulse or pause in the casualty stream. Casualty generator by table requires you to enter the number and type of casualties for one or more time periods. Like the casualty generator by rate, each generator generates one type of patient (WIA, DIS, or NBI).

Unlike the rate option, the numbers you enter for each casualty type are generated only once. Therefore, you identify a rate per block of time. For example, if you enter 10 casualties for 24 hours and 15 for 48 hours, then approximately 10 casualties are stochastically generated for the first 24 hours and 15 for hours 25 through 48.

1. From the Main menu, choose **Insert > Casualty Generator > Insert Table**.  
or Click the casualty generator folder in the Scenario Explorer with the right mouse button to obtain the context menu, select **Insert Table**.

A casualty generator titled “CG Table” will be added to the Casualty Generator folder in the Scenario Explorer.





### 6.2.3 Adding a User-Defined Casualty Stream

The user-defined option is suggested if you want to use a patient stream from another software program. The user-defined casualty generator allows you to override TML+'s stochastic patient stream generation. You enter the arrival time, PC code, and POI for each casualty.

*Note that the TML+ database is structured according to PC codes. Any patient streams you paste into TML+ must use PC codes.*

1. From the Main menu, choose **Insert > Casualty Generator > Insert User Defined**.  
or Click the casualty generator folder in the Scenario Explorer with the right mouse button to obtain the context menu, select **Insert User Defined**.

A casualty generator titled "CG User Defined" will be added to the Casualty Generator folder in the Scenario Explorer.

### 6.2.4 Importing a CASEST Casualty Table

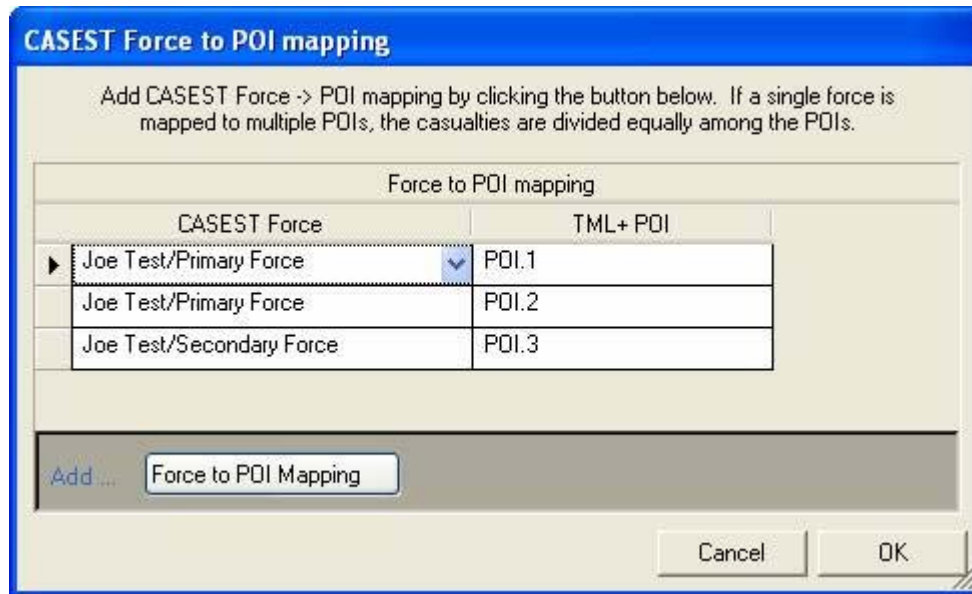
TML+ is able to import relevant properties of a casualty stream generated by the Casualty Estimation Tool (CASEST v.4.0.2) as a new casualty generator. Because CASEST produces random PC codes using methods similar to TML, the CASEST import is used only to retrieve a casualty rate.

1. From the Main menu, choose **Insert > Casualty Generator > Import CASEST Casualty Table**.  
or Click the casualty generator folder in the Scenario Explorer with the right mouse button to obtain the context menu, select **Import CASEST Casualty Table**.

2. Browse to locate the CASEST file you wish to import. Select **Open**.

CASEST represents data in terms of forces, or collections of people, who participate in battles. The closest TML+ equivalent is a POI (point of injury) that defines the geographical location of the source casualty stream. However, because a large force may have multiple POIs, the importer must allow complex mapping between forces and POIs. After selecting the source of the CASEST data, the first step in the import process is to ask the user for force-to-POI mappings. A single force can be assigned to multiple POIs in the dialog box.

3. Assign the CASEST forces to POIs. Click **OK**.



After the user completes the force-to-POI mapping, the import begins. TML+ first reads the number of the first day on which any casualties occur in CASEST. If the CASEST casualty stream does not start on the first day of the output data, TML+ asks the user whether to make the imported casualty table start on the first day of the TML+ simulation or on the day specified by CASEST.

4. Enter the Day you wish the imported casualty table to begin. Click **OK**.
5. Choose for TML+ to automatically set the KIA ratio based on the CASEST KIA rate or set the KIA ratio to a specified number.

*Refer to the TML+ Methodology Manual for a detailed description of importing CASEST data.*


### 6.2.5 Selecting a Casualty Generator

1. In the **Scenario Explorer > Casualty Generator** folder, click on the icon/name of the desired casualty generator.

The casualty generator will be highlighted and its properties will be displayed in the Properties Window.




### 6.2.6 Copying a Casualty Generator

1. Select the Casualty Generator to copy.
2. From the Main menu, choose **Edit > Copy**.  
or From the Standard toolbar, click the  button.  
or Click the **Ctrl+C** key.  
or Click the casualty generator with the right mouse button to obtain the context menu, select **Copy**.

The casualty generator will be copied to the clipboard.

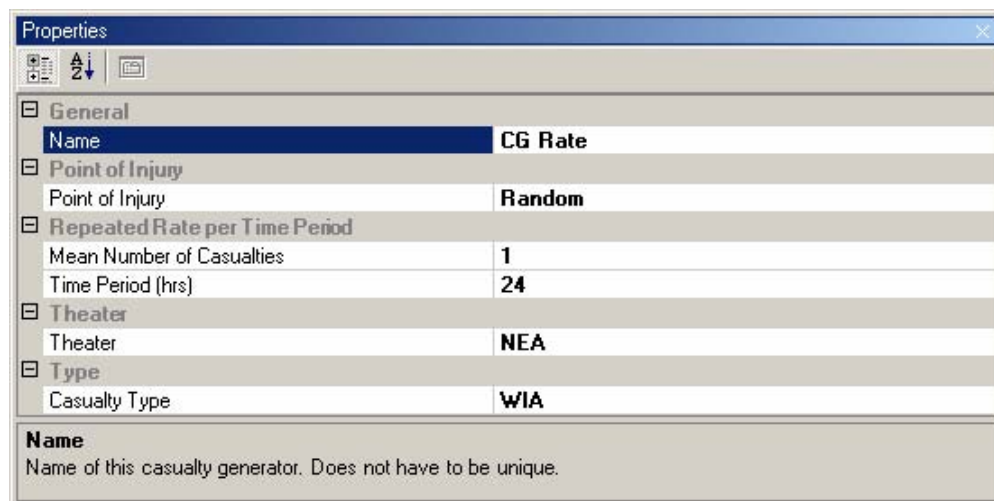
### 6.2.7 Pasting a Casualty Generator

1. Select the Casualty Generator folder in the Scenario Explorer.  
or Select any Casualty Generator.
2. From the Main menu, choose **Edit > Paste**.  
or From the Standard toolbar, click the  button.  
or Click the **Ctrl+V** key.  
or Click a casualty generator with the right mouse button to obtain the context menu, select **Paste**.

A casualty generator titled “Copy of xxx” will be added to the Casualty Generator folder in the Scenario Explorer.

### 6.2.8 Editing a Casualty Generator’s Properties

The properties of a casualty generator may be changed via the Properties Window. Refer to *The TML+ Objects* chapter for detailed information regarding each property.



Properties	
<b>General</b>	
Name	CG Rate
<b>Point of Injury</b>	
Point of Injury	Random
<b>Repeated Rate per Time Period</b>	
Mean Number of Casualties	1
Time Period (hrs)	24
<b>Theater</b>	
Theater	NEA
<b>Type</b>	
Casualty Type	WIA
<b>Name</b> Name of this casualty generator. Does not have to be unique.	



Properties

General

Name	CG Table
Point of Injury	
Point of Injury	Random
Table	
Casualty Table	(Collection)
Theater	
Theater	NEA
Type	
Casualty Type	WIA

**Name**  
Name of this casualty generator. Does not have to be unique.

Properties

General

Name	CG User Defined
Table	
User-defined Table	(Collection)

**Name**  
Name of this casualty generator. Does not have to be unique.

#### 6.2.9 Setting the KIA Ratio of All Casualty Generators

Killed in action (KIA) refers to troops who die on the battlefield and receive no medical care. KIA is entered as a ratio. The numerator is the number of troops expected to be killed. The denominator is the number of wounded in action (WIA). For example, if the KIA ratio is 1 to 100 and your scenario has 500 WIAs, approximately 5 troops will be stochastically generated as KIA.

1. Click the Casualty Generator folder in the Scenario Explorer. The KIA Ratio is displayed in the Properties Window.

Properties

KIA Ratio


Number killed in action	1
Number wounded in action	50

**Number killed in action**  
KIA ratio is expressed as number of killed in action per number of wounded in action.

2. Enter the number of WIAs expected to be killed in action.
3. Enter the total number of WIAs.



### 6.2.10 Deleting a Casualty Generator

1. Select the Casualty Generator.
2. From the Main menu, choose **Edit > Delete**.  
or From the Standard toolbar, click the  button.  
or Click the **Delete** key.  
or Click the Casualty Generator with the right mouse button to obtain the context menu, select **Delete**.

The Casualty Generator will be deleted from the scenario.

## 6.3 Working with Points of Injury

A point of injury (POI) is a geographical site on the battlefield where a casualty occurs. TML+ supports an unlimited number of POIs. Each POI has a probability associated with it that determines the percentage of casualties that occur at that location. All probabilities must total to 1. POIs may only be added to the Network View, not the Map View.

There is a defined relationship between a POI and a Self-Buddy Aid (SBA) medical capability. TML+ assumes that all casualties proceed from a POI immediately to an SBA (intuitively there is no distance relationship between the POI and SBA).

### 6.3.1 Adding a Point of Injury

1. From the **Common Data Explorer > Medical Capabilities > Land Based** folder, click and drag the **Self-Buddy Aid (SBA)** icon onto the Network View.

A POI titled "POI.x" (where x is some number) will be added to the Points of Injury folder in the Scenario Explorer.

An SBA titled "SBA.x" (where x is some number) will be added to the Medical Treatment Facilities folder in the Scenario Explorer.

The POI/SBA pair will be displayed in the Network View as a grouped entity.



The SBA will be displayed in the Map View, if enabled.




---

### 6.3.2 Selecting a Point of Injury

1. In the **Scenario Explorer > Points of Injury** folder, click on the icon/name of the desired POI.  
or In the Network View, click on the icon/name of the desired POI.


The POI will be highlighted and its properties will be displayed in the Properties Window.

### 6.3.3 Copying a Point of Injury

1. Select the POI to copy.
2. From the Main menu, choose **Edit > Copy**.  
or From the Standard toolbar, click the  button.  
or Click the **Ctrl+C** key.  
or Click the POI with the right mouse button to obtain the context menu, select **Copy**.

The POI will be copied to the clipboard.

### 6.3.4 Pasting a Point of Injury

1. Select the Point of Injury folder in the Scenario Explorer.  
or Select any POI in the Scenario Explorer.  
or make the Network View active.  
or make the Map View active.
2. From the Main menu, choose **Edit > Paste**.  
or From the Standard toolbar, click the  button.  
or Click the **Ctrl+V** key.  
or Click the right mouse button to obtain the context menu, select **Paste**. This is available in Scenario Explorer, Network View, and Map View.

A POI titled "POI.x" (where x is some number) will be added to the Points of Injury folder in the Scenario Explorer.

An SBA titled "SBA.x" (where x is some number) will be added to the Medical Treatment Facilities folder in the Scenario Explorer.



### 6.3.5 Editing a Point of Injury's Properties

The properties of a POI may be changed via the Properties Window. Refer to *The TML+ Objects* chapter for detailed information regarding each property.

Properties	
<b>General</b>	
Name	POI.1
<b>Probability</b>	
Probabilities for all POIs	POI Probability Editor
Probability for this POI	0.5

**Name**  
Name of this point of injury. Name must be unique to other POIs.

### 6.3.6 Setting Probabilities for All Points of Injury

1. Select any POI.
2. In the Properties Window, select the **Probabilities for all POIs** property.
3. Click the "..." button, the POI Probabilities Editor appears.

Points of Injury	
POI Probabilities	
Name	Probability
POI.2	0.01
POI.3	1
POI.4	1
POI.5	1
POI.6	1
POI.7	1


Normalize OK Cancel

4. Enter the percentage (in decimal format) of the patient stream you expect to occur at each POI. This number must be between 0 and 1.

*Note that the probabilities for all POIs must add up to 1. Casualties are randomly assigned to POIs based on these probabilities.*



### 6.3.7 Deleting a Point of Injury

1. Select the POI.
2. From the Main menu, choose **Edit > Delete**.
  - or From the Standard toolbar, click the  button.
  - or Click the **Delete** key.
  - or Click the right mouse button to obtain the context menu, select **Delete**. This is available in the Scenario Explorer and Network View.

The POI and corresponding SBA will be deleted from the scenario.

## 6.4 Working With Medical Treatment Facilities

A Medical Treatment Facility (MTF) is a geographical site at which medical care (varying by capability) is available. TML+ supports an unlimited number of MTFs. MTFs may only be added to the Network View, not the Map View.

### 6.4.1 Adding an MTF


Click and drag a Medical Capability icon in the Common Data Explorer onto the Network View. An MTF will appear and will be added as an MTF in the Scenario Explorer.

### 6.4.2 Selecting an MTF

1. In the **Scenario Explorer > Medical Treatment** folder, click on the icon/name of the desired MTF.
  - or In the Network View, click on the icon/name of the desired MTF.

The MTF will be highlighted and its properties will be displayed in the Properties Window.

### 6.4.3 Copying an MTF

1. On the Network View, select the MTF to copy.
2. From the Main menu, choose **Edit > Copy**.
  - or From the Standard toolbar, click the  button.
  - or Click the **Ctrl+C** key.
  - or Click the MTF with the right mouse button to obtain the context menu, select **Copy**.

The MTF will be copied to the clipboard.

### 6.4.4 Pasting an MTF

1. Select the MTF folder in the Scenario Explorer.
  - or Select any MTF in the Scenario Explorer.
  - or Make the Network View active.





or Make the Map View active.

2. From the Main menu, choose **Edit > Paste**.

or From the Standard toolbar, click the  button.

or Click the **Ctrl+V** key.

or Click the right mouse button to obtain the context menu, select **Paste**. This is available in Scenario Explorer, Network View, and Map View.

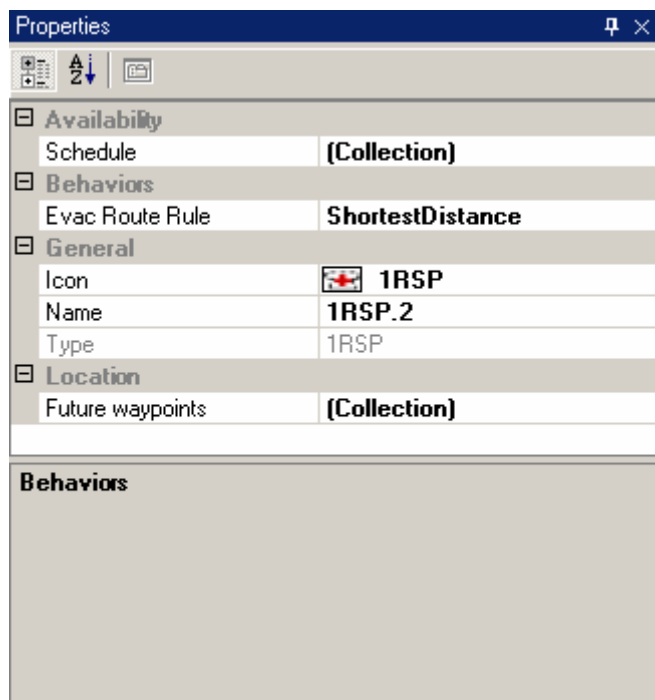
An MTF titled “MTFname.x” (where x is some number) will be added to the Medical Treatment Facilities folder in the Scenario Explorer.

#### 6.4.5 Moving an MTF

Once an MTF has been added to the Network View, it is also visible on the Map View. The MTF may be moved around on the Network View or Map View by clicking on the icon and dragging it to a new location.

#### 6.4.6 Editing Properties for an MTF


The properties of an MTF may be changed via the Properties Window. Refer to *The TML+ Objects* chapter for detailed information regarding each property.



#### 6.4.7 Deleting an MTF

1. Select the MTF.
2. From the Main menu, choose **Edit > Delete**.



or From the Standard toolbar, click the  button.

or Click the **Delete** key.


or Click the right mouse button to obtain the context menu, select **Delete**. This is available in Scenario Explorer and Network View.

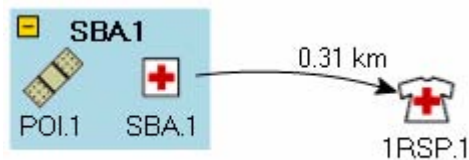
The MTF will be deleted from the scenario.

## 6.5 Working With Routes

Routes provide a path for casualty evacuation to the next level of care (an MTF). Routes are one-directional and indicate the distance between two MTFs.

### 6.5.1 Adding a Route


To add a Route to the network, place the cursor over the MTF from which the casualty will be traveling. Wait for the hand icon  to appear over the MTF. Click the mouse and, while pushing the mouse button, drag the cursor to the MTF to which the casualty will be traveling. Let up the mouse button. A one directional arrow will connect the two MTFs.



### 6.5.2 Selecting a Route

Click on the Route in the Network view. The Route will be marked with highlighted bullets.

### 6.5.3 Deleting a Route

1. Select the Route.
2. From the Main menu, choose **Edit > Delete**.
  - or From the Standard toolbar, click the  button.
  - or Click the **Delete** key.
  - or Click the right mouse button to obtain the context menu, select **Delete**. This is available in Network View only.

The Route will be deleted from the scenario. When an MTF is deleted, any Routes to or from the MTF will also be deleted.



#### 6.5.4 Editing Properties for a Route

The properties of a Route may be changed via the Properties Window. Refer to *The TML+ Objects* chapter for detailed information regarding each property.

Availability	
Priority	1
Schedule	(Collection)

Behaviors	
Maneuvers	(Collection)
Random Distance	No

MTFs	
From MTF	SBA.1
To MTF	1RSP.1

**From MTF**  
Name of medical treatment facility route is coming from.

#### 6.5.5 Editing the Distance of a Route

The default distance of a Route is 1km (kilometers), m (miles), or nm (nautical miles), depending on the Units of Measure set in the Preferences. The distance can be changed by editing the number in the Network View or by moving an MTF on either end of the Route in the Map View.

To edit the distance of a route:

1. On the Network View, click on the distance of the Route. The distance will appear in an editable box. Change the distance. Units of Measure (km, m, or nm) are set in the Preferences. Note that no changes will be reflected on the Map View.  
  
*or*
2. On the Map View, select an MTF on one end of the Route and move the MTF. The distance will change according to latitude/longitude locations on the map.



## 6.6 Working With Transportation Assets

Each MTF, other than SBA and 1RSP, requires transportation assets such as air, ground, or sea vehicles to transport casualties to the next higher level of care. Transportation pools are created for an MTF that consist of any combination of transportation types. Note that without transportation assets, there will be no means of transport from one MTF to another. The transportation pool used to evacuate a casualty is that pool which is associated with the receiving MTF.

### 6.6.1 Creating a Transportation Pool

Click a Transportation Type in the **Common Data Explorer Transportation Type** folder. Drag it to an MTF in the Network View. A Transportation Pool is created for that MTF and placed in the Transportation Pool folder in the Scenario Explorer.



### 6.6.2 Adding a Transportation Type

Click a Transportation Type in the **Common Data Explorer Transportation Type** folder. Drag it to the Transportation Pool located in the Network View. The transportation type is added to the Transportation Pool folder, both on the Network View and in the Scenario Explorer.


### 6.6.3 Selecting a Transportation Asset

Click a Transportation Asset in the Transportation Pool folder in the Scenario Explorer or click on the Transportation Asset icon in the Transportation Pool in the Network View.

1. In the **Scenario Explorer > Transportation Pool** folder, click on the icon/name of the desired asset.  
or In the Network View, click on the icon/name of the desired asset in the Transportation Pool.

The Transportation Asset will be highlighted and its properties will be displayed in the Properties Window.

### 6.6.4 Deleting a Transportation Pool

1. Select the Transportation Pool.
2. From the Main menu, choose **Edit > Delete**.  
or From the Standard toolbar, click the  button.  
or Click the **Delete** key.  
or Click the right mouse button to obtain the context menu, select **Delete**. This is available in Network View only.

### 6.6.5 Deleting a Transportation Asset

1. Select the Transportation Asset.



2. From the Main menu, choose **Edit > Delete**.

or From the Standard toolbar, click the  button.

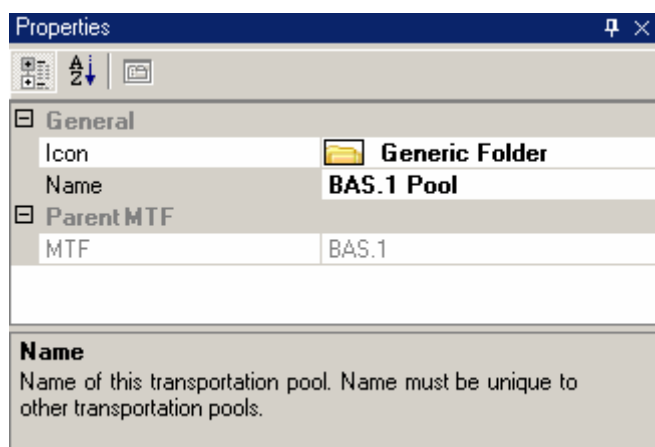
or Click the **Delete** key.


or Click the right mouse button to obtain the context menu, select **Delete**. This is available in Network View only.

The Asset will be deleted from the Transportation Pool. If the Asset being deleted is the only Asset in the Transportation Pool, then the pool will also be deleted.

#### 6.6.6 Editing Properties for a Transportation Pool

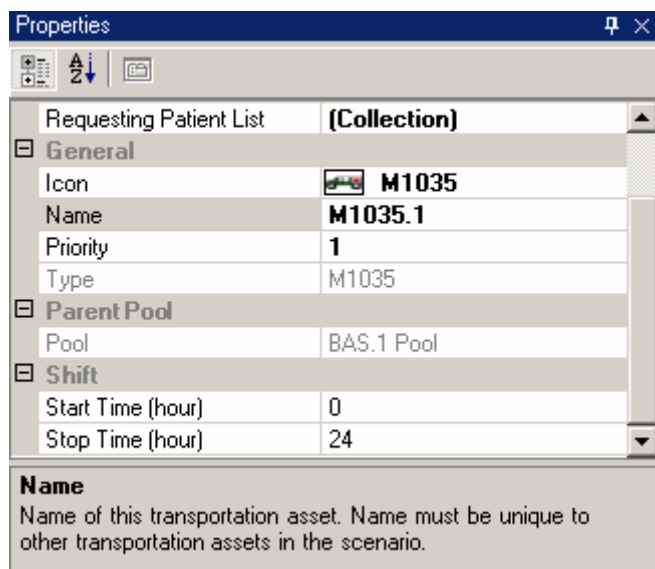
The properties of a Transportation Pool may be changed via the Properties Window. Refer to *The TML+ Objects* chapter for detailed information regarding each property.




Properties	
 <b>Generic Folder</b>	
Name	<b>BAS.1 Pool</b>
<b>Parent MTF</b>	
MTF	BAS.1
<b>Name</b> Name of this transportation pool. Name must be unique to other transportation pools.	

#### 6.6.7 Editing Properties for a Transportation Asset

The properties of a Transportation Asset may be changed via the Properties Window. Refer to *The TML+ Objects* chapter for detailed information regarding each property.



Properties	
Requesting Patient List <b>(Collection)</b>	
<b>General</b>	
Icon	 <b>M1035</b>
Name	<b>M1035.1</b>
Priority	<b>1</b>
Type	M1035
<b>Parent Pool</b>	
Pool	BAS.1 Pool
<b>Shift</b>	
Start Time (hour)	0
Stop Time (hour)	24
<b>Name</b> Name of this transportation asset. Name must be unique to other transportation assets in the scenario.	



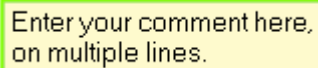
---

## 6.7 Working With Comments

Comments may be added to the Network View to convey additional information about the medical laydown.

### 6.7.1 Insert a Comment

1. From the Main menu, choose **Insert > Comment**.



Enter your comment here,  
on multiple lines.

A comment will be added to the middle of the Network View.

### 6.7.2 Selecting a Comment


1. Click on the rectangle of the desired comment in the Network View.

The comment will be highlighted and available for editing.

### 6.7.3 Moving a Comment

1. Select the Comment.
2. Drag the comment to a desired location.

### 6.7.4 Deleting a Comment

1. Select the Comment.
2. From the Main menu, choose **Edit > Delete**.  
or From the Standard toolbar, click the  button.  
or Click the **Delete** key.  
or Click the right mouse button to obtain the context menu, select **Delete**.



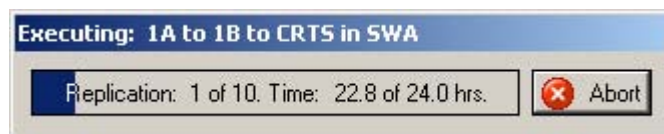
## 7. How to Execute TML+ Scenarios

Once you are satisfied with all your scenario inputs, you may “execute” the scenario. Your scenario will simulate the arrival of casualties and then output results of their flow through the medical laydown. The number of times your scenario will execute will correspond to the number of replications you specified, with a different random number seed for each replication.

### 7.1 To Run the Scenario

1. From the Main menu, choose **Simulation > Run**.  
or From the Execute toolbar, click the **Run** button.  
or Click the **F5** key.

The Executing dialog appears.



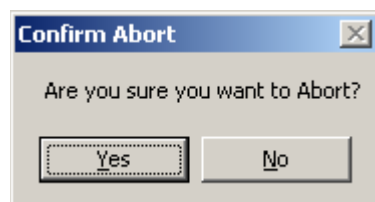
The progress of the run will be displayed in the dialog.

2. After the run is complete, the Reports Window will be displayed.

### 7.2 To Abort the Run

1. From the Executing dialog, click the **Abort** button.

The Confirm Abort dialog appears.



2. Choose **Yes** to abort the run.





## 8. How to Use TML+ Reports

While running a scenario, TML+ generates output that is viewed through reports. Once the simulation has completed execution, the Reports Explorer and Reports Window are displayed and the Scenario Explorer and Network View are closed. Reports of the TML+ output may be viewed and printed from the Reports Window.

*Note that the Scenario, Common Data, and Properties Explorers and the Network View may be viewed by Selecting the View Menu.*

### 8.1 Working With Reports

TML+ Reports are organized into four categories: Casualty Estimation, Care Providing, Transportation, and General Information.

- Casualty Estimation reports pertain to the number and types of casualties that occur in the scenario.
- Care Providing reports pertain to the treatment that occurs within each MTF and functional area, such as how many patients are treated, how long treatment takes, and how long patients wait to receive treatment.
- Transportation reports pertain to patient evacuation, such as how many patients are evacuated per trip, how long patients have to wait for evacuation, and how many times each asset is used.
- General Information reports provide a summary of your scenario inputs as well as a list of the assumptions built into TML+.

Within each report category are various reports containing information related to that category. Each report may be displayed in tabular or graphical format.

### 8.2 Generating Report Output

Open the scenario you wish to run, select **Simulation > Run**. The simulation will run and a TML report will be generated. To set the report database name and audit report options, please refer to the Report Properties section of this document.

## 8.3 Working With Report Display Preferences

Users may set report display preferences for time format, toolbar displays, report column options, and default report.

**Edit Preferences**

General Units of Measure Reports Display

Report Navigation

Style: Report options toolbar only

Data Table Features

☒ Allow filtering ☐ Allow column pinning ☐ Allow column summaries

User Format 1

Time Format: dd:hh:mm

Number of decimal digits to display: 2

User Format 2

Time Format: Minutes (no units)

Number of decimal digits to display: 2

Default Report

☒ Selected report: Casualties by type

☐ Default consolidated report

☐ Saved report (consolidated or standard):  Browse

OK Cancel

### 8.3.1 Setting the Report Navigation Style

TML+ offers two styles of report navigation – Reports Explorer and Toolbars. The two report methods are synchronized, allowing the user to use a combination of methods for report viewing. The Reports Explorer is always displayed and may be opened or closed like any window. The Report Selection toolbar and Report Options Toolbar are optional. The Report Options Toolbar is set as the default, but both or neither toolbar may be displayed by editing the Report Preferences under the Edit Menu.



To set the Report Navigation Style:

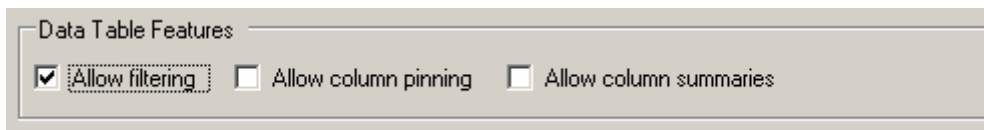
1. Go to **Edit > Preferences**. A new window opens.
2. Click the Reports Display tab.
3. Choose a Report Navigation Style to use for report navigation.
4. Click **OK**.



### 8.3.2 Setting the Data Table Features

When viewing tabular reports, several options are available for displaying column data. Filtering, column pinning, and column summaries are optional features that may be activated by editing the Preferences for Reports Display.

1. Go to **Edit > Preferences**. A new window opens.
2. Click the **Reports Display** tab.
3. Select the Data Table Features you wish to activate.
4. Click **OK**.




### 8.3.3 Setting Time Format Preferences

Many reports generated by TML+ include the actual time an event occurred. The user may format the time data field, choosing from two different formatting profiles. For example, you may choose to display time in dd:hh:mm or in total minutes. When a report is open, you can toggle between the two preferences (see below).



To set your report format preferences:

1. Go to **Edit > Preferences**. A new window opens.
2. Click the **Reports Display** tab.
3. Under the User Format 1 section, click the Time Format drop-down menu and select a format in which to display time.
4. Enter the number of decimal places to display for numbers that appear anywhere in the report and are not whole numbers.
5. Repeat for User Format 2 section.
6. Click **OK**.

While viewing a report, the user can toggle between the two formats defined above. Whenever a table is open, you can switch between the two formats by clicking the Toggle icon  on the main toolbar.

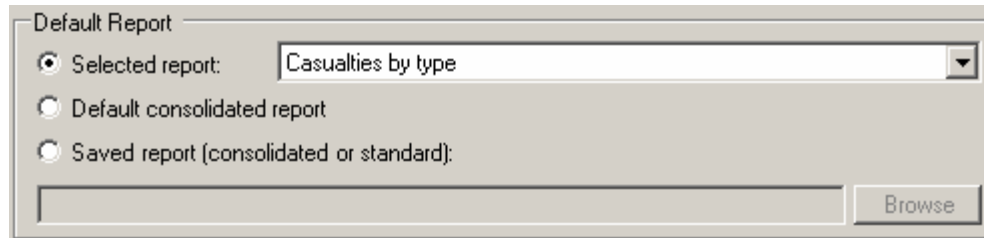
User Format 1	User Format 2
Time Format: <input type="text" value="dd:hh:mm"/>	Time Format: <input type="text" value="Minutes (no units)"/>
Number of decimal digits to display: <input type="text" value="0"/>	Number of decimal digits to display: <input type="text" value="0"/>

#### 8.3.4 Setting the Default Report

The user may choose a Selected Report, a Consolidated Report, or a previously Saved Report as the default report to view when the reports database opens. A Selected Report is a report from the pull-down menu. A Consolidated Report is a combination of reports in graphical format. A Saved Report is any report, either Selected or Consolidated, which was previously saved to disk.

To set the Default Report:

1. Go to **Edit > Preferences**. A new window opens.
2. Click the **Reports Display** tab.
3. Choose Selected Report, Default consolidated report, or Saved report. If choosing Saved report, use the Browse button to locate the previously saved report.
4. Click **OK**.



## 8.4 Working With Report Navigators

In order to view the reports generated by a running a scenario, TML+ offers two methods of report navigation – Reports Explorer and Toolbars. The two report methods are synchronized, allowing the user to use a combination of methods for report viewing.

### 8.4.1 Working With the Report Explorer

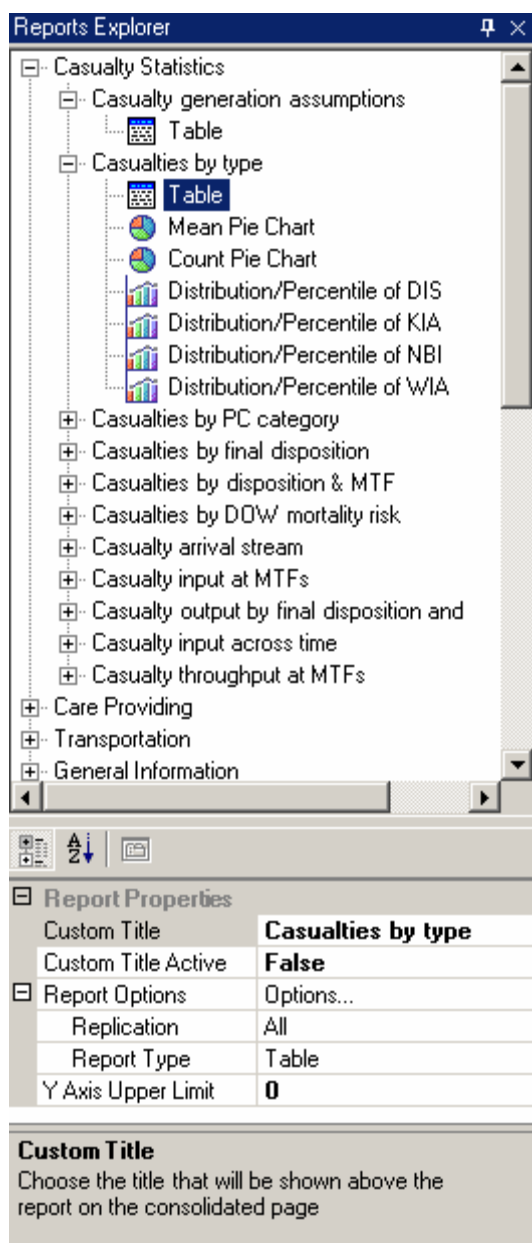
The TML Reports Explorer Navigator is displayed in two pieces – the Reports Explorer and the Reports Properties.

The **Reports Explorer** organizes reports into folders in a Reports Tree. Report Category is the highest level folder, containing four categories: Casualty Estimation, Care Providing, Transportation, and General Information. When a Category folder is opened, a list of reports available for that category is displayed. When the Report folder is opened, a list of available report types is displayed. Report Types are either tabular or graphical in format.

The **Reports Properties** contains a set of properties and options that pertain to the report currently being viewed. Refer to the Properties section of this document for detailed information regarding properties and options.

### 8.4.2 Selecting a Report Using the Report Explorer

1. Choose a Report Category in the Reports Explorer. Open the Category folder by clicking on the + or by double-clicking on the Category name.
2. Choose a Report by clicking on the + or by double-clicking the report name.
3. Choose a report format and click on the name. The number of formats for a report depends on the report.
4. Choose Report Options or set Report Properties as needed for the report being viewed. Refer to the Report Properties section of this document for details on each property and option.



### 8.4.3 Working With the Report Toolbars

In addition to the Reports Explorer, Report Toolbars are available for navigational purposes. TML+ has two toolbars – a Report Selection Toolbar and a Report Options Toolbar. The Report Options Toolbar is set as the default, but both or neither toolbar may be displayed by editing the Report Preferences under the Edit Menu.

- The Report Selection Toolbar organizes reports into drop-down lists for Report Category, Report Name, and Report Type. Report Category is the highest level folder, containing four categories: Casualty Estimation, Care Providing, Transportation, and General Information. When a category has been selected, a list of reports available for that category is available in the Report drop-down menu. When a report has been selected, a list of report types available is shown in the Report Type drop-down menu. Report Types are either tabular or graphical in format.



- The Report Options Toolbar contains of a set of options that can be used to filter the report currently being viewed. The options vary depending on the report selected for viewing.

Replication – If you run more than one replication of a scenario, the Replication menu lets you select the data for an individual replication or for all replications. When you select All from the drop-down menu, you see a summary of data across all replications.

Medical Treatment Facilities (MTF) and Functional Area (FA) – MTF and FA menus appear when appropriate, depending on the choices you make in the Category and Report menus. You use these menus to view the data pertaining to the different MTFs and FAs in your scenario.

Additional options may appear depending on the report selected. One example is Period. Period refers to a period of time expressed in hours.

The screenshot shows a toolbar with several icons for file operations (open, save, print, etc.) and a series of dropdown menus. The 'Category' dropdown is set to 'Care Providing'. The 'Report' dropdown is set to 'TIS statistics by FA'. Below these, the 'Replication' dropdown is set to 'All', the 'Report Type' dropdown is set to 'Table', and the 'FA' dropdown is set to '1RSP.1/First Responder -'.

#### 8.4.4 *Selecting a Report Using Toolbars*

1. Edit Report Preferences to display both toolbars.
2. Choose a Report Category in the Reports Explorer. Open the Category folder by clicking on the + or by double-clicking on the Category name.
3. Choose a Report by clicking on the + or by double-clicking the report name.
4. Choose a report format and click on the name. The number of formats for a report depends on the report itself.
5. Choose Report Options or set Report Properties as needed for the report being viewed. Refer to the Report Properties section of this document for details on each property and option.





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#### 8.4.5 Viewing a Report Generated From a Previous Run

Output from previously run reports may also be opened and viewed at any time.

1. Select **View > Reports > Open Reports**.
2. The Open TML+ Reports Database Window dialog will open. Browse for the report database of interest. Select **Report Database** and click **Open**.
3. Use a Report Navigator (either Reports Explorer or toolbars) to view the desired reports.

#### 8.5 Working With Data Table Features

Each column within a tabular report may be sorted, summed, filtered, or pinned. Sorting is a default feature for all columns in a report. Filtering, summing, and pinning are preferences that may be set in **Edit > Preferences > Reports Display > Data Column Features**.

##### 8.5.1 Sorting Data in a Column


You can sort columns of data within a report. Sorting is a feature that is available for all columns in a tabular report.

1. Click the heading once for ascending order.
2. Click the heading twice for descending order.

##### 8.5.2 Summing Data in a Column

The Summing Data feature is an optional feature that is not active when TML+ Reports opens. You may activate the summing feature by editing the Preferences for Reports Display. For each column of data, field statistics such as Count, Maximum Value, and Minimum Value may be calculated. For numeric fields, additional statistics for Average and Sum may be calculated.


To sum statistical fields for a column of data:

1. Click , located beside the column name.
2. Select the statistical fields desired.
3. Click **OK**.
4. Scroll to the bottom of the Report to see the field statistics. They will be labeled Grand Summaries report.



### 8.5.3 Filtering Data in a Column

Filtering a data column is an optional feature for tabular reports that is active when TML+ Reports opens. You may elect to inactivate the filter option by editing the Preferences for Reports Display. When filtering a data column, you are selecting to display a subset of the data in a report. Filtering is different from sorting because it hides the information on which you do not want to focus. Filtering is also different from sorting because you can filter more than one column at a time.

The filtering function is located at the top of each column as denoted by .

*Note that once you select a filter, the filter icon turns blue so that you can identify which columns have filters.*




### 8.5.4 Using Standard Filtering Options

Columns can be filtered on blanks, non-blanks, or any entry in the column. If you filter on blanks, only those rows with empty fields in the column on which you filtered are displayed. If you filter on non-blanks, only those rows with an entry (text or numeric) in the column on which you filtered are displayed.


In addition, you can filter the column on any entry in that column. For example, if you have the following entries in a column: 3, 4, 8, 8, 8, and you want to see only the data with a value of 8, you can select 8 from the filter and view only those three records with a value of 8 in that column.

To filter a report:

1. Click the  button, located beside the column name.
2. Select the entry or column to filter.
3. Repeat steps 1 and 2 for all the columns you want to filter.

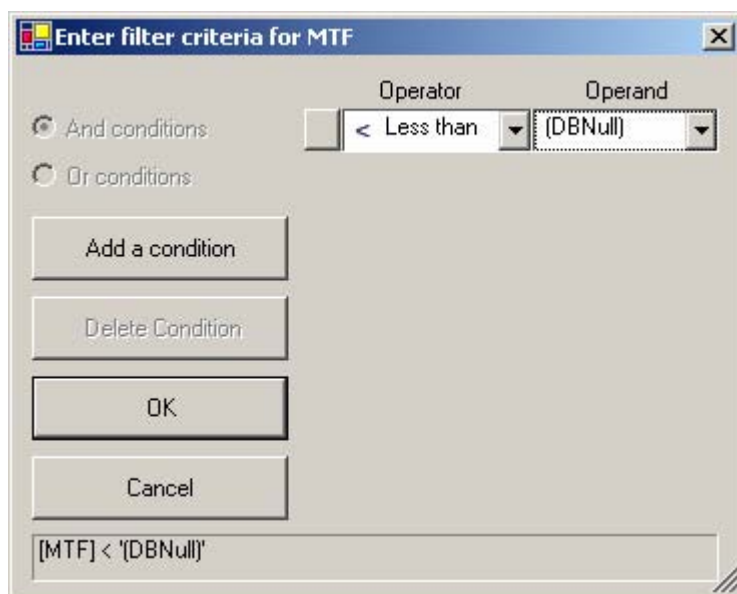
### 8.5.5 Customizing a Filter

If you do not want to filter on the standard filtering choices (blanks, non-blanks, and entries in the column), you can customize the filter. The customizing feature allows you to filter on one or more conditions rather than one specific entry. For example, if you have the following entries in a column: 3, 4, 5, 5, 8, you can use the customization feature to display only those columns with a quantity greater than 4.


1. Click the  button.
2. Select **Custom**. A new dialog box opens.
3. Click the drop-down menu and select the Operator.
4. Click the drop-down menu and select the Operand.
5. To add another condition, click the **Add a condition** button and follow steps 3 and 4.



6. Click **OK**.









#### 8.5.6 Clearing a Filter

1. Click the  button.
2. Select **All**.
3. Repeat for each column you wish to clear.

#### 8.5.7 Pinning a Column

Pinning a column is an optional feature for tabular reports that is not activated when TML+ Reports opens. You may elect to activate the pinning feature by editing the Preferences for Reports Display. Pinning and unpinning relocates a column. When a column is pinned, it is relocated to the first column in the table. If a second column is pinned, it is moved to the second column in the table. When a column is unpinned, it is moved to the right of all columns already pinned. Column position is relative to other columns and their status of pinned or unpinned. All columns are unpinned when the reports open.

1. Click the  button to pin a column. The icon changes from  to .
2. Click the  button to unpin a column. The icon changes from  to .



### 8.5.8 Dragging a Column Heading for Grouping

While viewing a tabular report, the user can view the data by groups, based on a column heading.

1. Click the column heading you wish to group.
2. Drag the heading to the area above the report table labeled "Drag a column heading here to group by that column." The data will be grouped by the heading, each in a separate folder.
3. To ungroup, click the column heading and drag it back down to the report table.

Drag a column header here to group by that column.

Casualty Type	Mean	Std Dev	Min	Max
DIS	2	1	1	3
KIA	6.33	1.53	5	8
NBI	3.67	3.51	0	7
WIA	52	7.81	47	61

Before Grouping

After Grouping

Casualty Type ▴				
+ Casualty Type : DIS (1 item)				
- Casualty Type : KIA (1 item)				
Mean ▾ ▴	Std Dev ▾ ▴	Min ▾ ▴	Max ▾ ▴	
6.33	1.53	5	8	
+ Casualty Type : NBI (1 item)				
+ Casualty Type : WIA (1 item)				

## 8.6 Configuring Report Alerts

The Alerts function allows you to program TML+ to signal you when defined criteria occur in the reports. For example, if you want to know when the consumable supplies are depleted, you can set an alert that highlights cells in the reports in which the supply quantity is less than zero. To configure an alert, you first create the alert and then enter the criteria.

### 8.6.1 Adding an Alert

1. Click the **Reports > Configure Alerts**. A new window opens.
2. Click **Add Alert**.
3. Select the background color (color for the cell in the report) and foreground color (text color), and enter a name for the alert.



4. Click in the Active column and select whether to display this alert. True displays the alert and False shuts the alert off.
5. Select whether to show the alert when all criteria are met (And) or when any single criteria is met (Or).
6. Select whether to place the alert on the cell, row, or column.
7. Click in the Report field and select the report on which to place the alert. Click in the Target Column Name field and select the column on which to place the alert.
8. Enter a tool tip. This will be displayed when you place the mouse over the highlighted cell with this alert.
9. The alert will be added to the Alerts folder.

**Alerts Editor**

Alerts

Alerts

- ☒ Trans Stats, All Reps: High percentage
- ☒ Trans Stats, 1 Rep: High percentage of
- ☒ Trans Util: High transport utilization
- ☒ Num Cas Min Wait: 50% waiting > 30
- ☒ TIS LOC Stats, All Reps: % Tasks wait
- ☒ TIS LOC Stats, All Reps: % Tasks wait
- ☒ TIS LOC Stats, 1 Rep: % Tasks waitin
- ☒ TIS LOC Stats, 1 Rep: % Tasks waitin
- ☒ TIS EA Stats, All Reps: % Tasks waitin

Add Criteria Add Alert Remove

Load Alerts Export Alerts OK Cancel

**Display**

Background Color 255, 0, 0

Foreground Color 0, 0, 0

Name **Num Cas Min Wait: 50% waiting**

**Report**

Active **True**

Criteria Logical Operator **And**

Highlight Mode **Cell Only**

Report **Number of casualties by minimum**

**Name**

A unique and descriptive name for this alert.

### 8.6.2 Adding Alert Criteria

An alert compares two values to determine if the alert is necessary. Criteria must be defined for the values. For example, for an alert that signals when the Percent Utilization is less than 10%, the number in the Percent Utilization column is compared with the quantity 10%. In this section, you are selecting values for the alert (steps 4 and 6) and how to compare them (step 5).

1. Click the + to the left of the new alert.
2. Click **Criteria** (the item indented under the alert).
3. Enter a name for the Report.
4. Click in the Column Name field and select the column in which the first item to compare appears.



---

5. Select the method for comparing the value in step 4 and step 6 (e.g., equal to, less than, greater than).

6. Click on **Literal/Column/Expression** to enter the text or quantity that will be compared with the column or cell selected in step 4. You can also use the drop-down menu to select another column to which to compare the first one.

### *8.6.3 Deleting Alerts and Criteria*

1. Click the criteria or alert you want to delete.
2. Click the **Remove** button.
3. Removing an alert will remove all of the criteria associated with the alert.

### *8.6.4 Exporting Alerts*

The Alerts folder and all of the properties and criteria associated with each alert may be exported or saved to disk for other users to share.

1. Click the **Export Alerts** button.
2. A dialog box appears. Enter the name and location for the exported alert.
3. Click **Save**.

### *8.6.5 Loading Alerts*


An Alerts folder that has been exported and saved by another user or at a previous time may be loaded into TML+.

1. Click the **Load Alerts** button.
2. A dialog box appears. Browse to locate the alerts to be loaded.
3. Click **Open**.
4. Alerts may also be appended to existing alerts by clicking **Yes** in the Load Alerts dialog box.

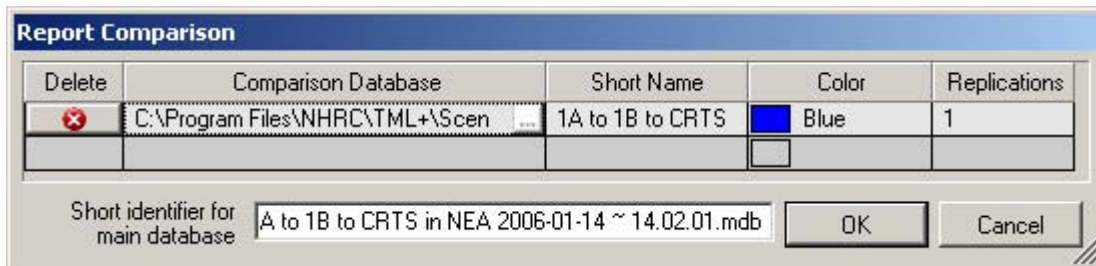


## 8.7 Comparing Reports




Results from one scenario run may be compared with results from other scenario runs. For example, if you are interested in learning whether including another Transportation Asset alleviates a delay in treatment, you can look at the Task Time per Casualty in MTF Report before and after you add the Transportation Asset to the scenario.

1. Open the report of your choice.
2. Click the Compare Reports icon  on the Report toolbar. A new dialog box opens.
3. Click the ellipsis to open a list of previous runs of the scenario.
4. Select the run to compare with the current database.
5. Repeat steps 3 and 4 until you have selected all the runs you want to compare.
6. Click **OK**. TML+ automatically imports the data from the database you selected and displays it in blue type.
7. The comparison feature stays enabled even while you change reports. To disable the report comparison feature: Click the icon on the Report toolbar. A new dialog box opens. Click the **Delete** button for those comparisons you wish to disable.

*Note that not all reports may be compared. For those in which a comparison does not make sense, the icon button will be grayed and inactive. Both tabular and graphical reports may be compared.*



The 'Report Comparison' dialog box contains a table with the following data:

Delete	Comparison Database	Short Name	Color	Replications
	C:\Program Files\NHRC\TML+\Scen...	1A to 1B to CRTS	 Blue	1
				

Below the table, there is a text field labeled 'Short identifier for main database' containing 'A to 1B to CRTS in NEA 2006-01-14 ~ 14.02.01.mdb'. At the bottom right are 'OK' and 'Cancel' buttons.

MTF (identical) $\Sigma \nabla \Phi$	Mean from Test 1A t $\Sigma \nabla \Phi$	Mean from Sample $\Sigma \nabla \Phi$
▶ 1RSP.1	18	88
1RSP.2	19	74
1RSP.3	7	74
CRTS.1	34	164
FRS.1		2
FRS.2		7



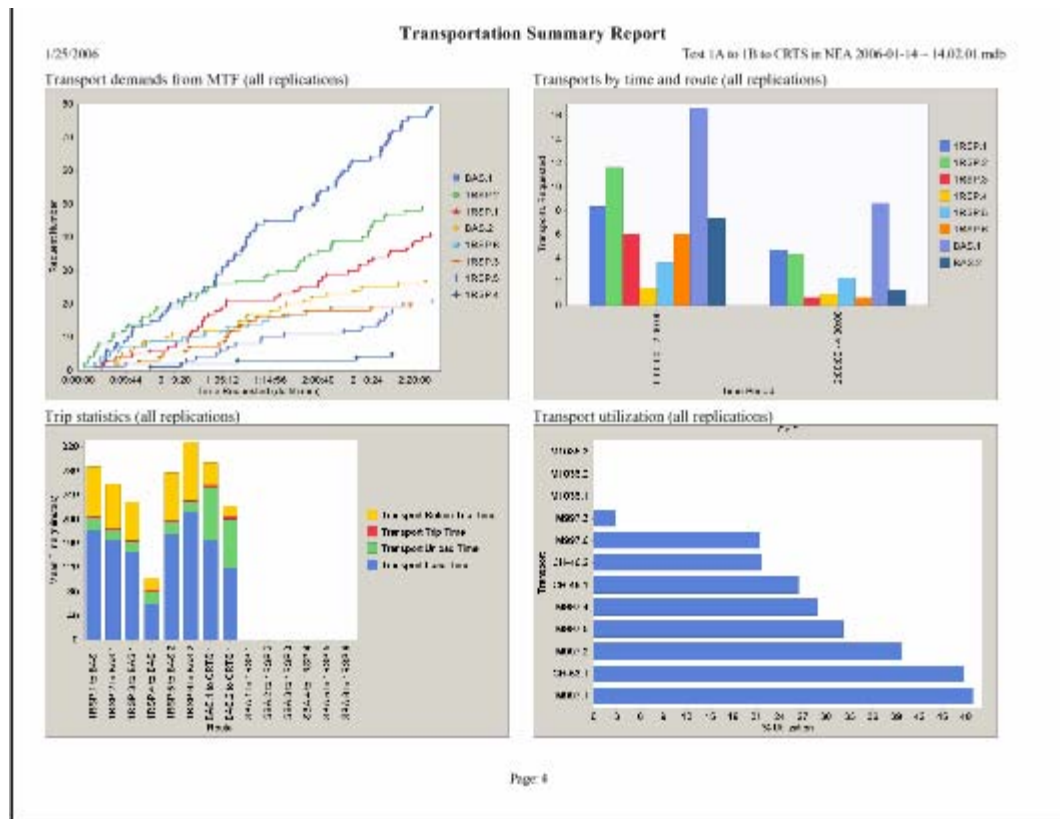
## 8.8 Consolidated Reports

TML+ allows the user to build Consolidated Reports, or a collection of reports for a single simulation run.

Consolidated Reports provide a quad-chart type view, displaying data in a presentation format. Consolidated Reports include up to eight reports and may be displayed two per page or four per page. A Consolidated Report with eight reports, four per page is set as the default report, but others may be configured.

### 8.8.1 Viewing a Consolidated Report

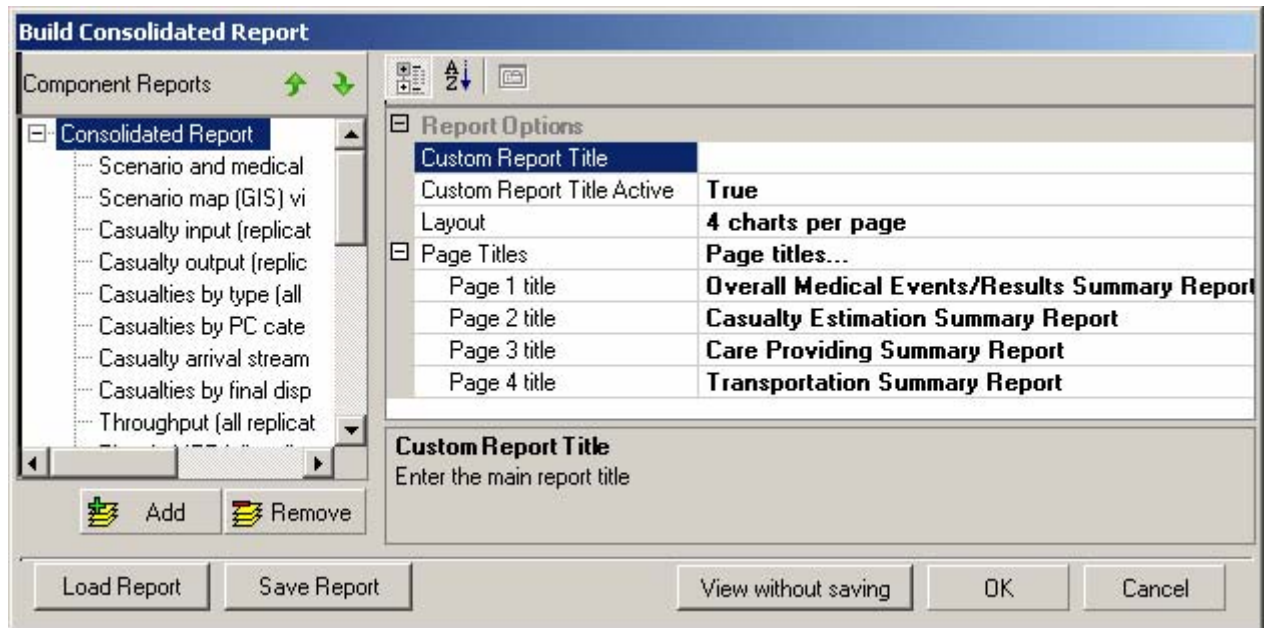
1. Select **Reports >View Consolidated Reports**.
2. Select **View Without Saving**.



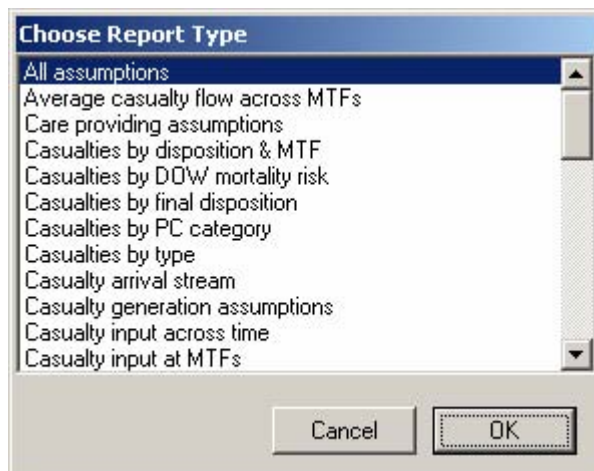
### 8.8.2 Building a Consolidated Report

1. Select **Reports >View Consolidated Reports**.
2. Click on **Consolidated Reports** in the Component Reports Window.
3. Edit the properties for the Consolidated Report. Enter a Report Title, Layout (select two or four charts per page), and Page Titles for each page of the report.

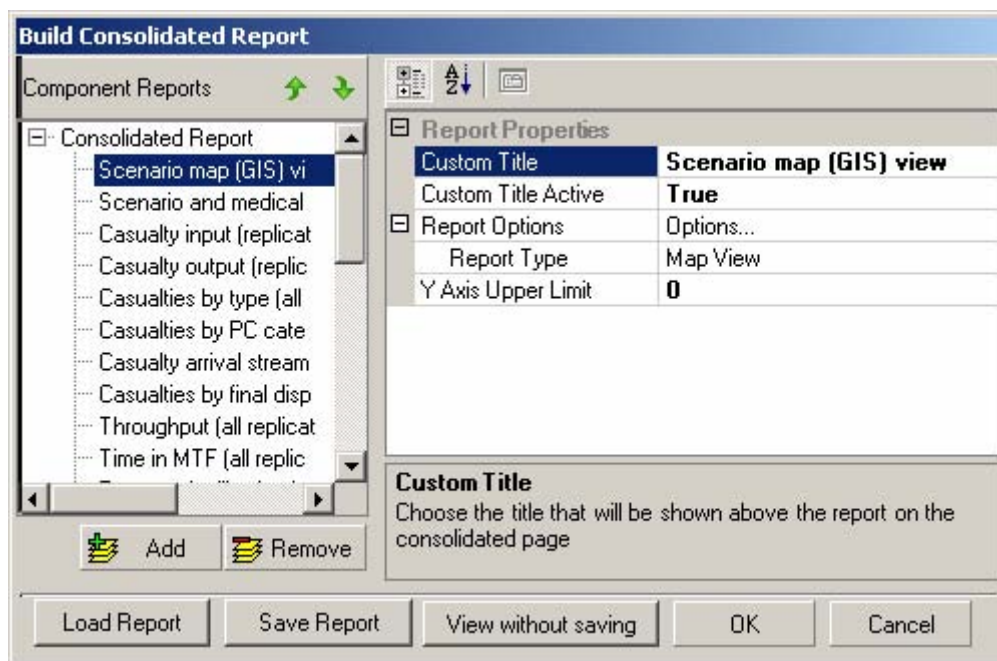




- Click **Add**. Select a report from the Choose Report Type Window.



- The Report will be added to the Consolidated Report List.
- Select a report name and edit properties for the report.
- Enter a custom title, if desired. Enter a Replication number, Report Type, and a Y Axis upper limit, if other than zero.



8. Repeat steps 4 thru 7 to add more reports to the Consolidated Report.

9. To remove a report from the Consolidated Reports, select the report and click **Remove**.

### 8.8.3 Saving a Consolidated Report

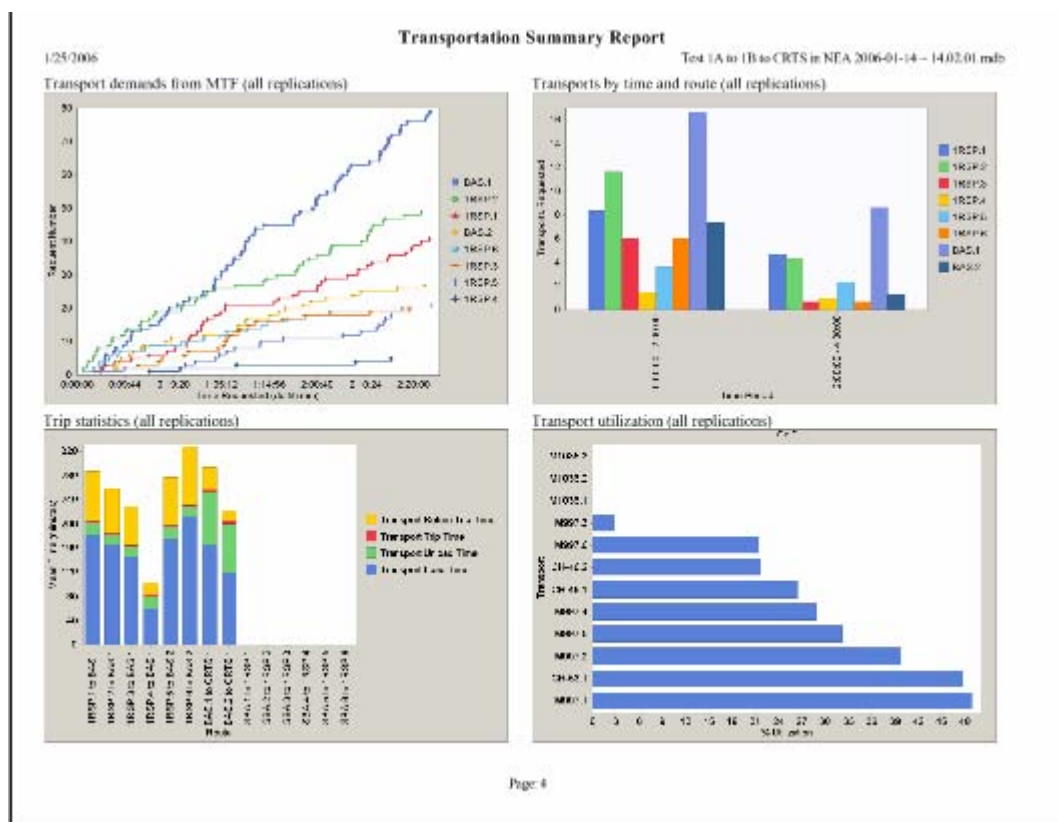
Consolidated Report settings may be saved for later use or use by another user. Click **Save Report** and enter the name and location of the saved file.

### 8.8.4 Loading a Consolidated Report

Consolidated Report settings that have been saved may be loaded. Click **Load Report** and use the Load Consolidated Report Window to locate the file you wish to load.

### 8.8.5 Closing a Consolidated Report

1. Click **Close Consolidated Report**.




## 8.9 Printing a Report

1. Select **File > Print** from the Menu Bar or click the printer icon on the toolbar.
2. Select the printer from the drop-down menu.
3. Select the number of copies.
4. Click **OK**.

## 8.10 Exporting a Report

TML+ supports the exportation of data to a comma-separated file (.csv), which can be opened in Excel.

1. Click the Export icon  on the toolbar. A dialog box opens.
2. Navigate to where you would like to save the file. Make a note of this location.
3. Type a name for the exported file.
4. Click **Save**.

## 9. The TML+ Objects

With TML+, you build your scenario from reusable components, or "objects." Each type of object is designed to represent a specific aspect of your scenario. This chapter describes the properties of the different types of objects. The objects are in alphabetical order.

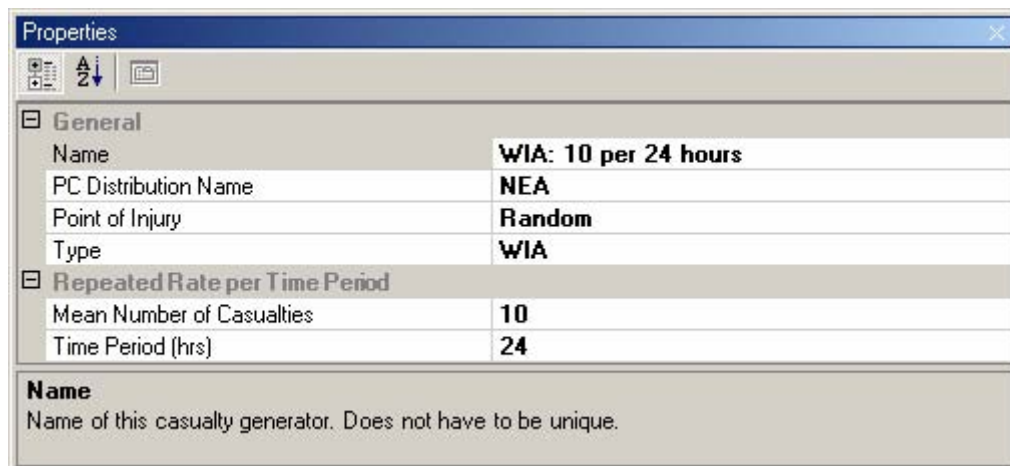
### 9.1 Casualty Generator Objects

The **Casualty Generator** Object represents a patient stream. The three Casualty Generator Objects are:

- Repeatable Rate Casualty Generator
- Time Intervals Casualty Rate Table
- User-Defined Casualty Stream

#### 9.1.1 Repeatable Rate Casualty Generator

The **Repeatable Rate Casualty Generator** object generates casualties across a specified time interval and repeats if the scenario time permits.



The screenshot shows a 'Properties' window for a 'Repeating Rate Casualty Generator' object. The window has a title bar 'Properties' and a close button. Below the title bar is a toolbar with icons for a list, a dropdown menu, and a help icon. The main area is divided into two sections: 'General' and 'Repeated Rate per Time Period'. The 'General' section contains four properties: 'Name' (WIA: 10 per 24 hours), 'PC Distribution Name' (NEA), 'Point of Injury' (Random), and 'Type' (WIA). The 'Repeated Rate per Time Period' section contains two properties: 'Mean Number of Casualties' (10) and 'Time Period (hrs)' (24). At the bottom, there is a 'Name' label and a description: 'Name of this casualty generator. Does not have to be unique.'

General	
Name	WIA: 10 per 24 hours
PC Distribution Name	NEA
Point of Injury	Random
Type	WIA

Repeated Rate per Time Period	
Mean Number of Casualties	10
Time Period (hrs)	24

**Name**  
Name of this casualty generator. Does not have to be unique.



The properties of the Repeatable Rate Casualty Generator object are (in alphabetical order):

Property	Description
Mean Number of Casualties	Mean number of casualties for this generator for the selected time period.
Name	Name of this casualty generator. The name does NOT have to be unique.
PC Distribution Name	Name of the patient condition distribution for this casualty generator.
Point of Injury	Point of injury location for casualties created by this generator. <b>If Random, then the POI will be randomly determined based on the POI distribution.</b>
Time Period	The time interval, expressed in hours, for which to repeatedly generate casualties.
Type	Type of casualties created by this generator. Choices are WIA, NBI, Disease, or Battle Fatigue.



### 9.1.2 Time Intervals Casualty Rate Table

The **Time Intervals Casualty Rate Table** object generates casualties across a collection of time intervals.

**Properties**

**General**

Name	CG Table
PC Distribution Name	NEA
Point of Injury	Random
Type	WIA

**Table**

Casualty Table	(Collection)
----------------	--------------

**Name**  
Name of this casualty generator. Does not have to be unique.

The properties of the Time Intervals Casualty Rate Table object are (in alphabetical order):

Property	Description
Casualty Table	Table of time periods with the corresponding mean number of casualties that will be generated for that time period.
Name	Name of this casualty generator. The name does NOT have to be unique.
PC Distribution Name	Name of the patient condition distribution for this casualty generator.
Point of Injury	Point of injury location for casualties created by this generator. <b>If Random, then the POI will be randomly determined based on the POI distribution.</b>
Type	Type of casualties created by this generator. Choices are WIA, NBI, Disease, or Battle Fatigue.

**Casualty Table**

Mean Number of Casualties	Ending Time Period (hrs)
10	24
5	48
15	72
*	

OK Cancel



### 9.1.3 User-Defined Casualty Stream

The **User-Defined Casualty Stream** object generates casualties across a collection of time intervals.

Properties

**General**

Name: CG User Defined

**Table**

User-defined Table: [Collection]

**Name**  
Name of this casualty generator. Does not have to be unique.

The properties of the User-Defined Casualty Stream object are (in alphabetical order):

Property	Description
Name	Name of this casualty generator. The name does NOT have to be unique.
User-Defined Table	Table of casualties.

User-Defined Casualty Table

Casualty Generators

Arrival Time (hours)	Patient Code	Casualty Type	Point of Injury
1	5 - CEREBRAL CONTUSION CLOSED WIT	WIA	POI.2
2	19 - WOUND FACE AND NECK OPEN LA	NBI	POI.3
5	184 - MIW CHEST WITH PNEUMOHEMOTH	WIA	POI.1
12.5	137 - WOUND ANKLE FOOT TOES OPEN	WIA	POI.3

Add ... Casualty Generator

OK Cancel

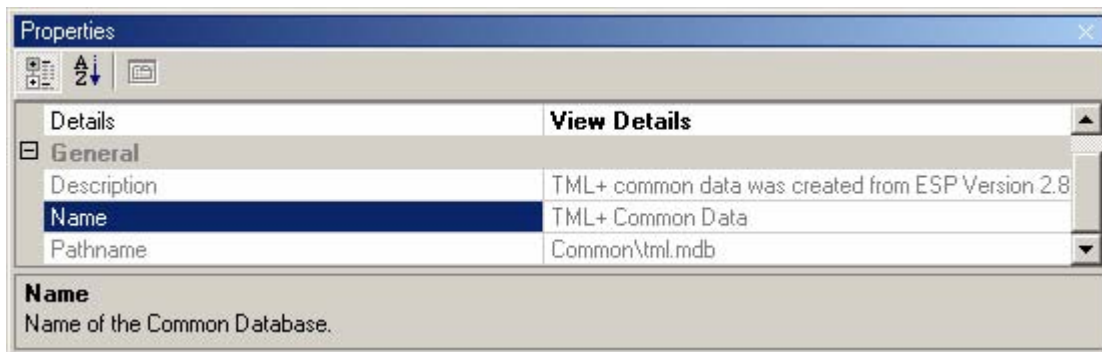
The properties of the User-Defined Table are (in alphabetical order):

Property	Description
Arrival Time	The time at which this casualty arrived, expressed in hours.
Casualty Type	Type of casualty. Choices are WIA, NBI, Disease, or Battle Fatigue.
Patient Condition Code	Patient condition code of this casualty.
Point of Injury	POI of this casualty.



## 9.2 Common Database Object

The **Common Database** object represents the medical capability and transportation types that may be reused in your scenario. The Common Database also incorporates data for over 400 patient conditions (PCs) and the corresponding medical treatment tasks.



The properties of the Common Database are (in alphabetical order):

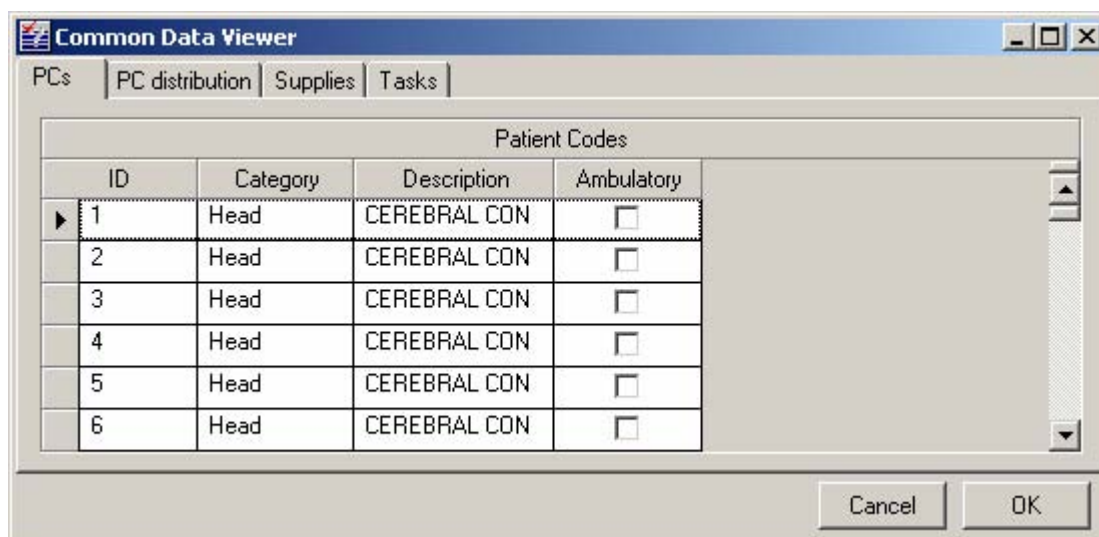
Property	Description
Description	Description of the common database. Read-only.
Name	Name of the common database. Read-only.
Pathname	Pathname of the common database. Read-only.
Patient Condition Codes	List of patient condition codes. Available under View Details > PCs tab. Read-only.
Patient Condition Distribution	List of PC distributions by theater. Available under View Details > PC Distribution tab. Read-only.
Supplies	List of all supplies. Available under View Details > Supplies tab. Read-only.
Tasks	List of all tasks. Available under View Details > Tasks tab. Read-only.





### 9.2.1 Patient Conditions

A Patient Condition (PC) code is a three-digit number describing patients' injuries, physical conditions, or diseases that were formulated by the Defense Medical Standardization Board to standardize diagnostic formats across medical resource models. PC codes constitute the underlying data on which TML+ and other medical modeling and simulation programs draw to model, among other things, supply and personnel usage and requirements. The PCs tab under the Common Data Viewer (from the View Details button) contains the PC codes.



The properties of Patient Conditions are (in alphabetical order):

Property	Description
Ambulatory	Checked (X) if the patient condition is ambulatory...does not need a stretcher during evacuation. Read-only.
Category	Category of the patient condition. Read-only.
Description	Description of the patient condition. Read-only.
ID	Unique identifier of the patient condition. Read-only.



### 9.2.2 Patient Condition Distribution

To determine a patient stream in a model like TML+, real data from previous similar missions are used, and then percentages are statistically distributed across patient conditions likely to result from input parameters. The percentages must all add up to one to be considered valid. In TML+, various distributions are available for your scenario.

The **PC Distribution** tab under the Common Data Viewer (from the View Details button) contains the patient condition distributions by theater.

PC Distribution				
PC	Disease	NBI	WIA	Battle Fatigue
25 - FRACTURE SPINE CLOSED WI	0	0.0024990755	0.000428003	0
26 - FRACTURE SPINE CLOSED WI	0	0.0056978923	0.000989008	0
27 - FRACTURE SPINE CLOSED WI	0	0.0007997041	0.000374003	0
28 - FRACTURE SPINE CLOSED WI	0	0.0019992604	0.000882008	0
29 - FRACTURE SPINE OPEN WITH	0	0.0022991495	0.001193010	0
30 - FRACTURE SPINE OPEN WITH	0	0.0022991495	0.002785025	0

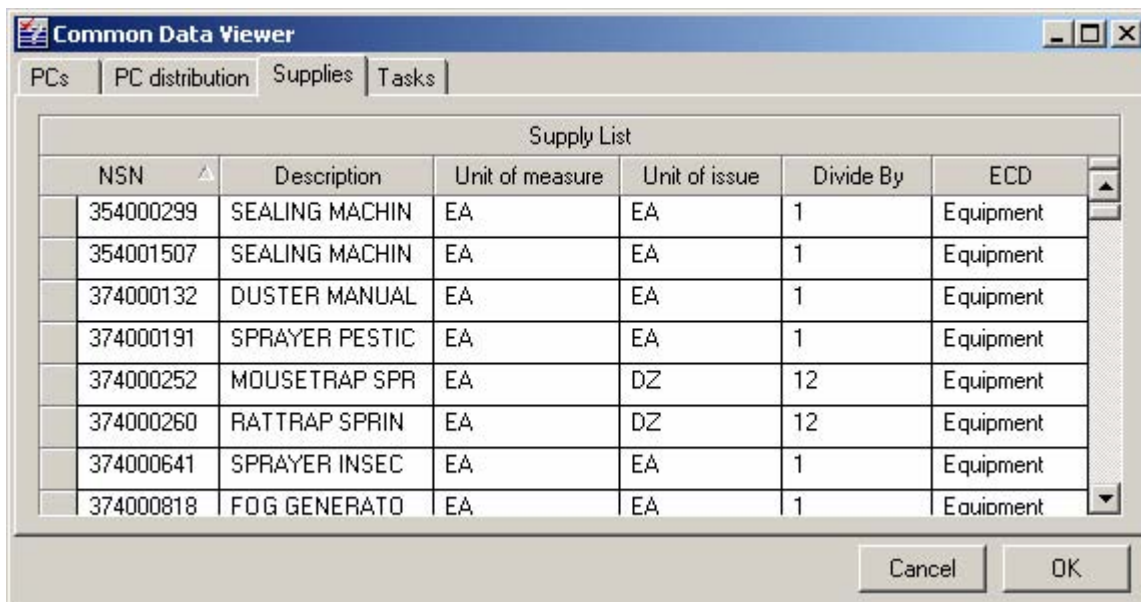
The properties of the PC Distribution are (in alphabetical order):

Property	Description
Battle Fatigue	Battle Fatigue (BF) probability for the PC. Read-only.
Disease	Disease probability for the PC. Read-only.
NBI	Nonbattle injury (NBI) probability for the PC. Read-only.
PC	Patient Condition. Read-only.
WIA	Wounded in action (WIA) probability for the PC. Read-only.

### 9.2.3 Supplies

Supplies are linked to the tasks medical providers perform to treat patients. Supplies are classified as equipment, consumables, or durables. Equipment generally refers to large pieces such as oxygen tanks, consumables to things used once (medications, IV tubes), and durables for things like batteries that may be used more than once.

The **Supplies** tab under the Common Data Viewer (from the View Details button) lists all of the supplies.



NSN	Description	Unit of measure	Unit of issue	Divide By	ECD
354000299	SEALING MACHIN	EA	EA	1	Equipment
354001507	SEALING MACHIN	EA	EA	1	Equipment
374000132	DUSTER MANUAL	EA	EA	1	Equipment
374000191	SPRAYER PESTIC	EA	EA	1	Equipment
374000252	MOUSETRAP SPR	EA	DZ	12	Equipment
374000260	RATTRAP SPRIN	EA	DZ	12	Equipment
374000641	SPRAYER INSEC	EA	EA	1	Equipment
374000818	FOG GENERATO	EA	EA	1	Equipment

The properties of a Supply are (in alphabetical order):

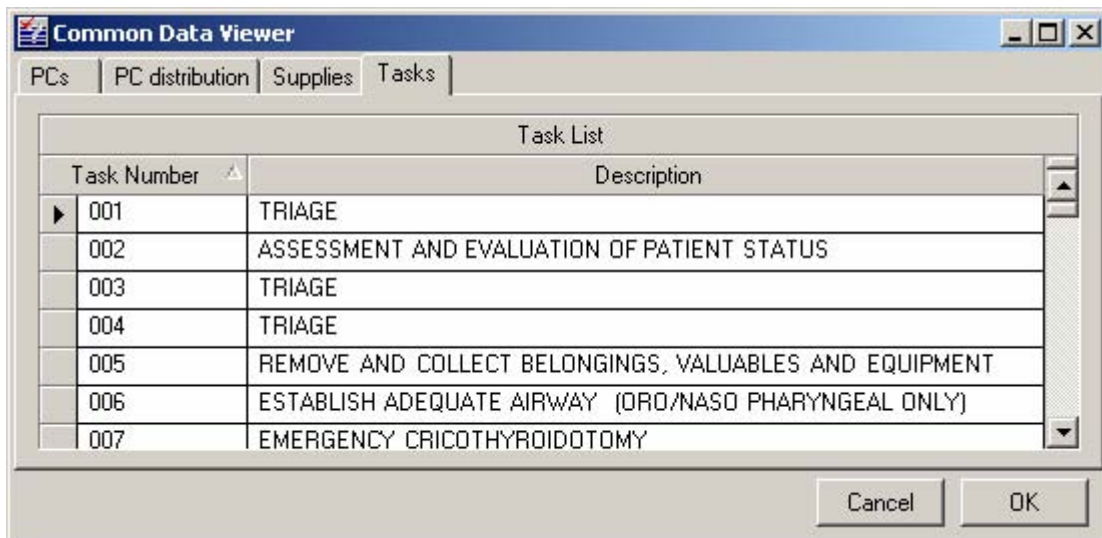
Property	Description
Description	Description of the supply. Read-only.
Divide By	Number of supply items in a package, box, bottle, carton. Read-only.
ECD	Equipment, Consumable, or Durable. Read-only.
NSN	Unique identifier for the supply. Read-only.
Unit of issue	How supply is issued e.g., by the box, in a package of 100, Read-only.
Unit of measure	How supply is measured out e.g., in liter, mg, ml, Read-only.



#### 9.2.4 Tasks

Tasks are linked to PC codes, and refer to that which medical providers do in order to treat their patients. Tasks can range from repeatable ones like taking a pulse once every 4 hours to tasks one may perform only once, such as prepping a patient for surgery. Each one is associated with one or more PCs and, consequently, tied to resources such as those supplies and personnel needed to treat the condition(s).

The **Tasks** tab under the Common Data Viewer (from the View Details button) lists all the tasks.



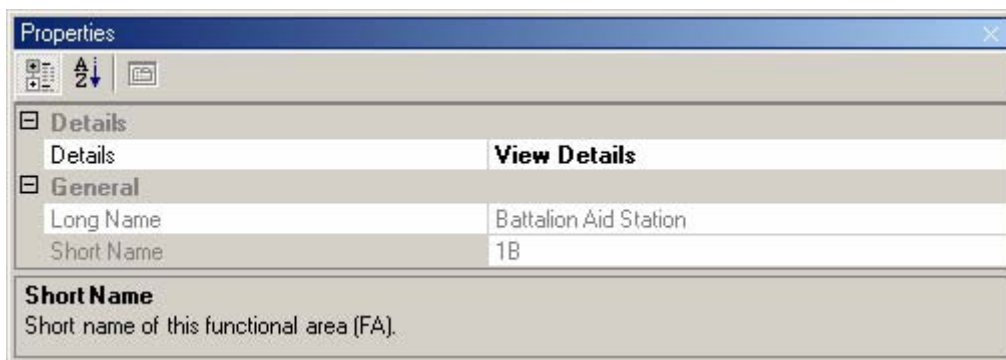
The properties of a Task are (in alphabetical order):

Property	Description
Description	Description of the task. Read-only.
Task Number	Unique identifier for the task. Read-only.



### 9.3 Functional Area Object

The **Functional Area** object defines an area of medical capability. A Medical Treatment Facility (MTF) is composed of one or more Functional Areas (FAs).



The properties of a Functional Area are (in alphabetical order):

Property	Description
Long Name	More descriptive name of the Functional Area. Read-only.
Short Name	Short name of the Functional Area. Used in certain reports. Read-only.
Tasks	List of all tasks. Available under View Details > Tasks tab. Read-only.



### 9.3.1 General Properties

The **General** tab under the FA Common Data Viewer (from the View Details button) lists all the general properties.

**FA Common Data - Battalion Aid Station**

General | Inventory | Tasks/Usage | Treatment Priority/Percentages | GTS | Personnel

Descriptive Name: Battalion Aid Station ☐ Decrement supplies only

Short Name: 1B Max Casualties in FA: 999999

Service Discipline: PRIORITY Max Simultaneous Tasks: 2

**FA Routing**

Task Number	To Functional Area	Reserve Spot In FA
▶ 278	Evac	<NONE>

Cancel OK

The General properties are (in alphabetical order):

Property	Description
Descriptive Name	More descriptive name of the FA. Read-only.
FA Routing	Routing table for this FA. When the specified task has been completed, the patient will be routed to the specified FA. Optional: may reserve a spot (similar to a bed). Read-only.
Max Casualties in FA	The maximum number of casualties that can be in this FA. This property is similar to the number of beds. Read-only.
Max Simultaneous Tasks	The maximum number of simultaneous (concurrent) tasks that may be performed in this FA. Read-only.
Service Discipline	The method of choosing the casualty to treat. Choices are PRIORITY and FIFO (First In First Out). Read-only.
Short Name	Short name of the functional area. Used in certain reports. Read-only.
Tasks	List of all tasks. Available under View Details > Tasks tab. Read-only

### 9.3.2 Supply Inventory

The **Inventory** tab under the FA Common Data Viewer (from the View Details button) lists the Supply Inventory defined for the FA.

The screenshot shows a software window titled "FA Common Data - Battalion Aid Station". It has several tabs: "General", "Inventory" (which is selected), "Tasks/Usage", "Treatment Priority/Percentages", "GTS", and "Personnel". Below the tabs, there is a section for "Inventory Multipliers (applied when inventory is used by simulation)". It contains two input fields: "Consumables" with the value "1" and "Equipment" with the value "1". Below this is a table titled "Supply Inventory". The table has two columns: "Supply" and "Quantity Issued". It lists four items: "Med - 1 - ACETAMINOPHEN TABLETS 0.325GM 1000S" with a quantity of 2, "Consum - 8 - ADHESIVE TAPE SURG 12INx5YDS MOLESKIN" with a quantity of 2, "Consum - 12 - AIRWAY KIT PERCUTANEOUS EMERGENCY ADULT 1S" with a quantity of 1, and "Consum - 14 - AIRWAY NASOPHARYNGEAL ROBERTAZZI 30FR 12S" with a quantity of 0.5. At the bottom right of the window are "Cancel" and "OK" buttons.

Supply	Quantity Issued
Med - 1 - ACETAMINOPHEN TABLETS 0.325GM 1000S	2
Consum - 8 - ADHESIVE TAPE SURG 12INx5YDS MOLESKIN	2
Consum - 12 - AIRWAY KIT PERCUTANEOUS EMERGENCY ADULT 1S	1
Consum - 14 - AIRWAY NASOPHARYNGEAL ROBERTAZZI 30FR 12S	0.5

The properties of a Supply Inventory are (in alphabetical order):

Property	Description
Inventory Multiplier Consumables	Increases the initial quantity of the consumables by the specified multiplier.
Inventory Multiplier Equipment	Increases the initial quantity of the equipment by the specified multiplier.
Quantity Issued	The starting quantity of the supply item.
Supply	The category, number, and description of the supply item. Read-only.
Tasks	List of all tasks. Available under View Details > Tasks tab. Read-only.



### 9.3.3 Tasks

The **Tasks/Usage** tab under the FA Common Data Viewer (from the View Details button) lists the tasks performed for each PC code. *Note that the treatment order is determined by the Generic Task Sequence (GTS).*

FA Common Data - Battalion Aid Station

General | Inventory | **Tasks/Usage** | Treatment Priority/Percentages | GTS | Personnel

Tasks by PC

PC	Task Number	Task Ti	Min Task Ti	Max Task Ti	% Pati	Init Tim	Recur Tim
180	001 - TRIAGE	2	1.6	5	100	1	0
180	002 - ASSESS	2	1.6	5	100	2	0
180	022 - O2 ADMIN	2	1.6	5	75	1	0

Supply

Supply	Quantity
Consum - 405 - MASK ORONASAL SEMI-RIG	1
Equip - 449 - OXYGEN ADMIN KIT, CASE, RE	1
Consum - 2257 - TUBING OXYGEN 84IN LG	1

PC

PC	Task Number	Task Ti	Min Task Ti	Max Task Ti	% Pati	Init Tim	Recur Tim
180	024 - VITAL SIG	2	1.6	5	100	6	0

PC 180 - MIW ABDOMEN AND LOWER LIMBS WITH FRACTURE AND NERVE INJURY WITH PENETRATING WOUND OF SPI

Cancel OK

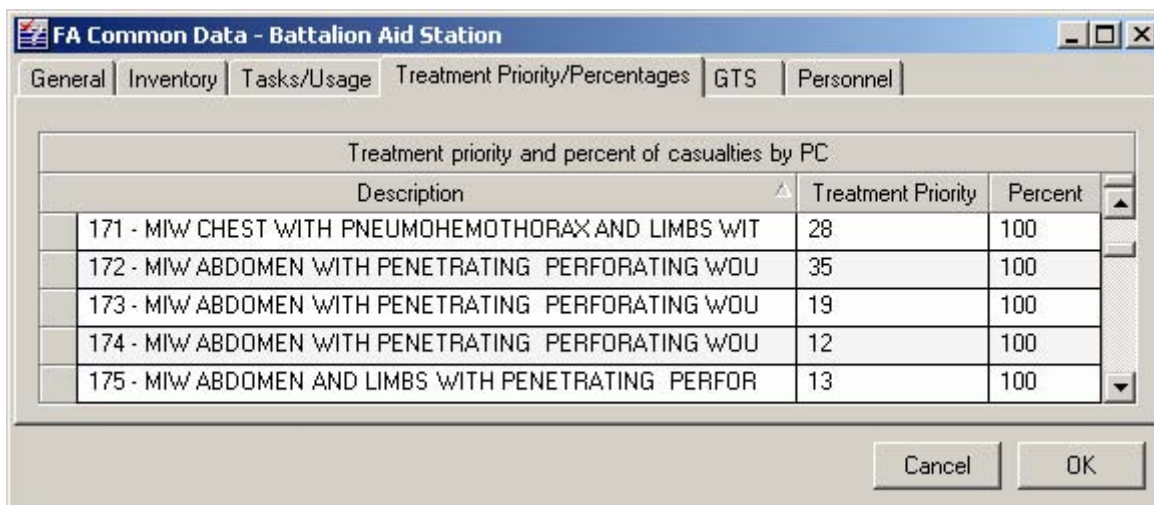
The properties of the Tasks are (in alphabetical order):

Property	Description
Init Time	The number of times to perform the task in the first 24-hour period.
Max Task Time	The maximum time in minutes to perform the task. The actual task time is randomly determined. (Bounded exponential distribution). Read-only.
Min Task Time	The minimum time in minutes to perform the task. The actual task time is randomly determined. (Bounded exponential distribution). Read-only.
PC	The patient condition code for the task. Read-only.
% Patients	The percentage of patients who will have this task performed. This is randomly determined. Read-only.
Quantity	The number of supplies used when the task is performed. Read-only.
Recur Time	The number of times to perform the task in subsequent 24-hour periods. Read-only.
Supply	List of supplies used when the task is performed.
Task Number	The unique task number and description. Read-only.
Task Time	The time in minutes to perform the task. The actual task time is randomly determined. (Bounded exponential distribution). Read-only.



#### 9.3.4 Treatment Priority

The **Treatment Priority/Percentages** tab under the FA Common Data Viewer (from the View Details button) lists the treatment priority and the percentage of patients accepted by the FA for each PC code.



The properties of the Treatment Priority/Percentages are (in alphabetical order):

Property	Description
Description	The patient condition code. Read-only.
Percent	The percentage of patients who will be accepted by this FA. This is randomly determined. Read-only.
Treatment Priority	The treatment priority of the patient condition code. Read-only.



### 9.3.5 Generic Task Sequence (GTS)

The **GTS** tab under the FA Common Data Viewer (from the View Details button) lists the order in which the tasks will be performed in the FA. *Note that not all tasks are performed.*

Sequence	Task Code	Continuous
1	001 - TRIAGE	<input type="checkbox"/>
1	002 - ASSESSMENT AND EVALUATION OF PATI	<input type="checkbox"/>
2	006 - ESTABLISH ADEQUATE AIRWAY (ORO/N	<input type="checkbox"/>

id	DefaultPersLvl	MinPersLvl	Lock
33	11	11	<input checked="" type="checkbox"/>

The properties of the GTS are (in alphabetical order):

Property	Description
Continuous	A continuous task will hold equipment until the patient leaves the Functional Area. Read-only.
DefaultPersLvl	The skill level of the personnel type who attempts to perform the task first. Read-only.
Lock	If Locked (checked), the personnel type must be available. Read-only.
MimPersLevel	The minimum skill level of the personnel type who attempts to perform the task when the default is busy. Read-only.
Sequence	The treatment order of the task. Tasks are called concurrent if the sequence numbers are identical. Concurrent tasks may be performed simultaneously (up to max). Read-only.
Task Code	The unique task number and description. Read-only.

### 9.3.6 Personnel

The **Personnel** tab under the FA Common Data Viewer (from the View Details button) lists the medical staff available for the FA.

Personnel Type	Description	Quantity	Skill Le	Shift Start	Shift End
GMD-1	GMD (General Medical Officer)	1	1	0	24
Physicians	Physicians	0	2	0	24
General Surgeons	General Surgeons	0	3	0	24
Anesthesiologists	Anesthesiologists	0	4	0	24
Physicians Assista	Physicians Assistant	0	5	0	24
Nurse - OR	Nurse - OR	0	6	0	24
Nurse - Critical Car	Nurse - Critical Care	0	7	0	24

The Personnel properties are (in alphabetical order):

Property	Description
Description	Additional information about the personnel type.
Personnel Type	A short name for the personnel type.
Quantity	The number of people of this type.
Shift End	The time the personnel type stops being available during any 24-hour period.
Shift Start	The time the personnel type is available during any 24-hour period.
Skill Level	The skill level of the personnel type. Used in selecting the medical provider, especially if default provider is busy.




## 9.4 Medical Capability Object

The **Medical Capability** object defines the capabilities of a Medical Treatment Facility (MTF).

Properties

**General**

Echelon	1B
Icon	 BAS
Long Name	Without power (BAS)
Max Casualties Waiting	999999
Short Name	BAS

**Short Name**  
Short name of this level of care type.

The properties of the Medical Capability object are (in alphabetical order):

Property	Description
Echelon	Echelon of this medical capability. Deprecated. Read-only.
Icon	Icon of this medical capability. Read-only.
Long Name	More descriptive name of this medical capability. Read-only.
Max Casualties Waiting	The maximum number of casualties waiting at this medical capability before an alternate route is chosen for new casualties. Read-only.
Short Name	Short name of the medical capability. Used in certain reports. Read-only.



## 9.5 Medical Treatment Facility Object

The **Medical Treatment Facility (MTF)** object is a deployed medical capability. The user may define the MTF's hours of operation, move it from one location to another, and endow it with evacuation assets.

**Properties**

**Availability**

Schedule [Collection]

**Behaviors**

Evac Route Rule ShortestDistance

**General**

Icon BAS

Name BAS.1

Type BAS

**Location**

Future waypoints [Collection]

**Name**

Name of this medical treatment facility. Name must be unique to other MTFs.

The properties of the Medical Treatment Facility object are (in alphabetical order):

Property	Description
Evac Route Rule	Rule to determine route for evacuation. Choices are Shortest Distance and Priority.
Future Waypoints	Geographical position waypoints in the future for this MTF. <b>Valid when GIS is enabled.</b>
Icon	Icon of this MTF.
Name	Name of this MTF. <b>Name must be distinct from other MTFs in the scenario.</b>
Schedule	List of time that this MTF is available.
Type	Type of this MTF. Read-only.



## 9.6 Point of Injury Object

The **Point of Injury** object represents the location of the casualty's wounding.

Properties

General

Name POI.1

Probability

Probabilities for all POIs POI Probability Editor

Probability for this POI 0.5

**Name**  
Name of this point of injury. Name must be unique to other POIs.

The properties of the Point of Injury object are (in alphabetical order):

Property	Description
Name	Name of this point of injury. <b>Name must be distinct from other POIs in the scenario.</b>
Probability	Probability of casualties occurring at this POI. <b>Probabilities for all POIs must sum to 1.0.</b>



## 9.7 Route Object

The **Route** object represents the evacuation path from one MTF to another.

Properties

**Availability**

Priority: 1

Schedule: (Collection)

**Behaviors**

Maneuvers: (Collection)

Random Distance: No

**MTFs**

From MTF: 1RSP.4

To MTF: BAS.1

**From MTF**

Name of medical treatment facility route is coming from.

The properties of the Route object are (in alphabetical order):

Property	Description
From MTF	Name of the medical treatment facility from which the route comes. Read-only.
Maneuvers	List of maneuvers for this route. Read-only when the GIS is enabled.
Priority	Priority of this route relative to the other routes originating from the MTF. The route with the highest priority (e.g., 1) is attempted first, and so forth. The user should make sure that no two routes have the same priority.
Random Distance	If Yes, the distances (in the Maneuver property) for this route are treated as the maximum of randomly determined distances.
Schedule	List of time that this route is available. Currently used only for display purposes. An unavailable route is displayed dimmed.
To MTF	Name of the medical treatment facility to which the route is going. Read-only.



## 9.8 Scenario Object

The **Scenario** object represents the content and structure of a TML+ document.

Properties	
<b>Author</b>	
Author	Dr. Paula Konoske
E-mail Address	konoske@nhrc.navy.mil
Organization	Naval Health Research Center (NHRC)
Phone #	619-553-9235
<b>General</b>	
Classification	Unclassified
Creation Date	8:00:00 AM Wednesday, May 18, 2005
Description	Scenario to demonstration TML+ capabilities.
Full Path	C:\Documents and Settings\jbrock\My Documents\Visual Studio P
Modification Date	10:04:17 AM Thursday, January 19, 2006
Scenario Name	1A to 1B to CRTS in SWA
Version	A
<b>GIS</b>	
GIS Status	Disabled
<b>Length of Scenario</b>	
Length of Scenario	24
Units	hours
<b>Report</b>	
Filename	1A to 1B to CRTS in SWA
<b>Output Audit</b>	
Output Audit	Yes
Output Care Providing Messages	Yes
Output Casualty Generator Messages	Yes
Output Transportation Messages	Yes
Overwrite	No
<b>Simulation</b>	
Number of Replications	10
Random Number Seeds	(Collection)
<b>Scenario Name</b> Name of this scenario.	

The properties of a Scenario object are (in alphabetical order):

Property	Description
Author	Author of this scenario.
Classification	Highest security classification of this scenario.
Creation Date	Date this scenario was created. Read-only.
Description	Description of this scenario.





Property	Description
E-mail Address	Author's e-mail address.
Filename	Filename of the TML+ reports database output for this scenario. The extension ".mdb" is automatically added to the filename.
Full Path	Location of this scenario file. Read-only.
GIS Status	Enables or disables the Geographical Information System (GIS).
Length of Scenario	Length in time of this scenario.
Modification Date	Date this scenario was modified. Read-only.
Number of Replications	Number of times the simulation will be executed. Each replication will use a different random number seed. Changing this value will automatically generate new random number seeds.
Organization	Author's organization.
Output Audit -> Output Audit	If Yes, a log of simulation events will be added to the Reports Database. If No, the log will not be created.
Output Audit -> Output Care Providing Messages	If Yes, all care providing messages will be output to the Reports Database. If No, no care providing messages will be output.
Output Audit -> Output Casualty Generator Messages	If Yes, all casualty generator messages will be output to the Reports Database. If No, no casualty generator messages will be output.
Output Audit -> Output Transportation Messages	If Yes, all transportation messages will be output to the Reports Database. If No, no transportation messages will be output.
Overwrite	If Yes, the previously created Reports Database is overwritten.  If No, a new Reports Database is created and the filename is appended with the current date and time.
Phone #	Author's telephone number.
Random Number Seeds	List of random number seeds. Each replication will use its respective random number seed.
Scenario Name	Name of this scenario.
Units	Unit of time for the scenario length. Choices are hours and days.
Version	Version of this scenario.



## 9.9 Transportation Asset Object

The **Transportation Asset** object represents a vehicle available for evacuating patients.

The screenshot shows a 'Properties' window for a Transportation Asset. It has a title bar 'Properties' and a close button. Below the title bar are icons for a list, a dropdown, and a save icon. The main area is divided into sections: 'Behaviors' with fields 'Behavior' (Designated), 'Load Patient List' ((Collection)), and 'Requesting Patient List' ((Collection)); 'General' with fields 'Icon' (M997), 'Name' (M997.1), 'Priority' (1), and 'Type' (M997); 'Parent Pool' with field 'Pool' (BAS.1 Pool); and 'Shift' with fields 'Start Time (hour)' (0) and 'Stop Time (hour)' (24). The 'Name' field is highlighted. At the bottom, there is a 'Name' section with a description: 'Name of this transportation asset. Name must be unique to other transportation assets in the scenario.'

The properties of a Transportation Asset object are (in alphabetical order):

Property	Description
Behavior	Behavior of this transportation asset. Choices are Designated or Divert.
Icon	Icon of this transportation asset.
Load Patient List	List of patient conditions that can be loaded on this transportation asset.
Name	Name of this transportation asset. <b>Name must be distinct from other transportation assets in the scenario.</b>
Pool	Parent transportation pool for this transportation asset. Read-only.
Priority	Priority of this transportation asset relative to the other assets belonging to the parent pool. The asset with the highest priority (e.g., 1) is attempted first, and so forth. <b>The user should make sure that no two assets have the same priority.</b>
Requesting Patient List	List of patient conditions that can request this transportation asset.
Start Time (hour)	The time (in a 24-hour period) that this transportation asset starts accepting demands. For example, a helicopter may only fly during daytime hours.



Property	Description
Stop Time (hour)	The time (in a 24-hour period) that this transportation asset stops accepting demands. For example, a helicopter may only fly during daytime hours.
Type	Type of transportation asset. Read-only.

## 9.10 Transportation Pool Object

The **Transportation Pool** object represents all available Transportation Assets for a specific MTF.

The properties of a Transportation Pool object are (in alphabetical order):

Property	Description
Icon	Icon of this transportation pool.
MTF	Parent medical treatment facility for this transportation pool. Read-only.
Name	Name of this transportation pool. <b>Name must be distinct from other transportation pools in the scenario.</b>



## 9.11 Transportation Type Object

The **Transportation Type** object defines the capabilities of an evacuation asset.

**Properties**

**General**

Capacity	4
Description	M1035 4x4 Ambulance Soft-Top HMMWV-Mini.
Icon	M1035
<b>Name</b>	<b>M1035</b>

**Speed & Range**

Empty Speed	88.00 kph
Loaded Speed	88.00 kph
Range	563.27 km

**Time Delays**

Post Mission Delay	0.17 hrs
Pre Mission Delay	0.17 hrs
Wait Time (min)	11

**Time Load/Unload**

Ambulatory Loading Time (min)	2
Ambulatory Unloading Time (min)	2
Litter Loading Time (min)	3
Litter Unloading Time (min)	3

**Name**  
Name of this transportation type. Name must be unique to other transportation types.

The properties of a Transportation Type object are (in alphabetical order):

Property	Description
Ambulatory Loading Time	Time in minutes to load an ambulatory patient on this transportation type.
Ambulatory Unloading Time	Time in minutes to unload an ambulatory patient on this transportation type.
Capacity	Maximum number of seats available for this transportation type. <b>An ambulatory patient occupies one seat. A litter patient occupies two seats.</b>
Description	Description of this transportation type.
Empty Speed	Speed of this transportation type when empty (no patients). Units may be kilometers per hour (kph), miles per hour (mph), or knots.
Icon	Icon of this transportation type.
Litter Loading Time	Time in minutes to load a litter patient on this transportation type.



Property	Description
Litter Unloading Time	Time in minutes to unload a litter patient on this transportation type.
Loaded Speed	Speed of this transportation type when loaded (1 or more patients). Units may be kilometers per hour (kph), miles per hour (mph), or knots.
Name	Name of this transportation type. <b>Name must be distinct from other transportation types in the scenario.</b>
Post Mission Delay	Time that this transportation type will be unavailable <u>after</u> a mission. Units may be minutes (min), hours (hrs), or days.
Pre Mission Delay	Time that this transportation type will be unavailable <u>before</u> a mission. Units may be minutes (min), hours (hrs), or days.
Range	Range of this transportation type. Units may be kilometers (km), miles (mi), or nautical miles (nm).
Wait Time	Time in minutes that this transportation type will wait for additional patients.

## A. Glossary

Glossary	
Name	Description
1RSP	First Responder – The first person a casualty encounters in the medical chain of evacuation.
Alerts	A message, customized by the user, sent to signal them when defined criteria appear in TML+ simulation run reports.
AMAL	Authorized Medical Allowance List – Collection of medical supplies grouped for use by functional area.
BAS	Battalion Aid Station – A far-forward medical treatment facility (MTF) that offers clinical assessment; treatment administered includes use of intravenous fluids and antibiotics, preservation of the airway by surgical procedure, and application of more secure splints and/or bandages. The BAS provides initial resuscitation and routine health services and carries the theater sick-call supplies.
Capabilities-based sets	Medical supplies grouped by their function and usage within a treatment facility.
CASEVAC	Casualty evacuation system – The evacuation system that renders care during patient transport from the point of injury (POI) to a collection point or MTF.
Casualty Generators	A stream of casualties/patients that arrives at a randomly generated time and location with randomly generated patient conditions. In TML+ the various methods used to calculate casualty numbers include by rate, by table, or by user-defined rates. TML+ uses FORECAS and CASEST as underlying patient stream data.
Colocated Medical Treatment Facility	MTFs grouped together to augment the medical services they provide. For instance, an FRSS and an STP may be placed together to add operating room tables and hence the ability to perform life- and limb-saving procedures.



Glossary	
Name	Description
Common Database	The Common Database is an object within a scenario that represents the medical capability and transportation types that may be reused. The Common Database also incorporates data for over 400 patient conditions and the corresponding medical treatment tasks.
CRTS	Casualty Receiving Treatment Ship – A general-purpose amphibious assault ship that receives, provides treatment for, and transfers casualties. Its objectives are to save life and limb, provide initial resuscitative treatment, and perform stabilization for evacuation of casualties whose medical requirements exceed its capabilities. CRTS capabilities include triage, lab, x-ray, operating room (OR), ward, pharmacy, dental, battle dressing station, portable medical locker, antidote locker, first-aid box, emergency response kit (ERK), junior ERK, and preventive medicine (PM) capability. CRTS is modeled with the medical capabilities, personnel, and supplies of a Surgical Company (SC).
DIS	Disease – A casualty type designation indicating that the person presented at an MTF with an illness.
DOW	Dead of wounds or died of wounds.
ERCS	En Route Care System – A medical capability that provides treatment while in transit. ERCS has three phases: casualty evacuation (CASEVAC), tactical medical evacuation (MEDEVAC), and strategic evacuation. (See each of those entries for more specific definitions.)
FA	Functional Area – A medical capability within an MTF designated for a specific purpose (e.g., the OR, or the x-ray component).
FRSS	Forward Resuscitative Surgical System – A medical capability that provides limited triage/preoperative trauma management and postoperative holding capability, and is equipped to provide life- and limb-saving surgical procedures. Includes triage, OR, and ward (with limited holding capability). An FRSS can serve as a forward element of the SC or as a stand-alone surgical element colocated with a BAS or STP.
Iteration(s)	Also called a run, the number of times a scenario is “run”, or simulated, through TML+.
KIA	Killed in action – Troops who die on the battlefield and do not receive any medical care.



Glossary	
Name	Description
Lab/Pharm	Functional areas within a Surgical Company or a CRTS. Lab provides hematology, microbiology, blood chemistry, and urinalysis capabilities. Pharmacy provides the materiel required to establish and maintain pharmacy capabilities.
MEDEVAC	Medical evacuation system – The evacuation system that provides care during evacuation from a BAS, STP, FRSS, or SC to a theater hospital.
MTF	Medical treatment facility – Any of a number of different configurations of medical materiel and personnel combined to provide various levels of medical care.
NBI	Nonbattle injury – Injury incurred while engaged in any activity performed outside the battlefield.
NEA	Northeast Asia
Objects	The parts of TML+ and its scenario-building functions that include casualty generators, points of injury, medical capabilities, MTFs, transportation assets, and routes between MTFs.
OR	Operating Room – A functional area within an MTF. The OR provides resuscitative/stabilizing surgery to casualties unlikely to survive MEDEVAC.
Patient queuing	The part of the system for drawing a population of casualties through a medical treatment network that dictates the order in which patients will be treated.
Patient stream	The specific configuration of casualties (in PC Code descriptors) that a scenario may include, in some cases stochastically calculated, based on probabilities established by the casualty estimation tools FORECAS and/or CASEST.
PC or PC Code	Patient Condition code – A three-digit number describing casualty patients' injuries, physical conditions, or diseases. A group of 400 or so PCs were formulated by the Defense Medical Standardization Board to standardize diagnostic formats across medical resource models. PC codes constitute the underlying data on which TML+ and other medical modeling and simulation programs draw.





Glossary	
Name	Description
PM	Preventive Medicine – Equivalent in some ways to a functional area, but because it does not treat patients, it is more a medical capability, as it performs necessary technical functions for ensuring water potability, food inspection, sanitary waste disposal, vector control, and communicable disease monitoring and immunization.
POI	Point of injury – Indicates a geographical site on the battlefield where injury occurs. In TML+, it is considered the point from which the First Responder must move or transport the injured individual.
Properties	Details of those variables that define TML+ objects within a scenario. For instance, to establish overall units of measure for time or distance, the user navigates within the Properties box to select either days or hours (for time), or kilometers (km), miles (mi), or nautical miles (nm) (for distance). Properties may also determine scenario parameters such as mean number or type of casualty, or types of behavior within an evacuation route for an MTF.
Random Seed Number	As a stochastic model, TML+ uses random draws to simulate a scenario. This process requires a random seed number, used to initialize the random number generator. A large prime number works best.
Replications	Each replication represents a patient stream being run through a simulated treatment network once. The user may define the number of times the stream is put through the simulation so as to get a representative sample.
Runs	The number of times a given scenario is run. See also Iteration.
SBA	Self-Buddy Aid – The treatment at the POI that each patient gives themselves or receives from another troop.
SC	Surgical Company – An MTF that typically has greater surgical and medical capabilities than a BAS, including triage, OR, ward, x-ray, laboratory, pharmacy, dental, and preventive medicine functional areas. SC objectives are to save life and limb, provide initial resuscitative treatment, and perform stabilization for evacuating casualties whose medical requirements exceed SC capabilities.
Service discipline	This refers to the two rules by which a patient stream is queued: either based on a first-in, first-out basis (FIFO) or one which dictates that the casualty with the worst injuries is treated first.



Glossary	
Name	Description
Stochastic vs. Deterministic	Statistical methods used in TML+ to determine patient stream and flow. Stochastic is synonymous with random, pertaining to chance, while a deterministic method does not involve chance, but always produces the same output for a given starting condition. In TML+ this means that when creating a patient stream, the model takes a stochastic or random draw from the pool of underlying data that relies on assigned probabilities to determine if a particular patient condition will show up for treatment in the patient stream. A deterministic equation would read: if this condition is present, that always occurs, and in TML+, it is used to model patient flow within the medical chain of evacuation. If the first MTF is busy, then the patient moves to the next level of care.
STP	Shock Trauma Platoon – An MTF that can serve as a beach evacuation station, reinforce a BAS, operate as an intermediary casualty collecting and clearing point between forward elements and the Surgical Company (SC), or serve as the forward element of an SC (i.e., triage /evacuation platoon) preparing to relocate. STP has triage and limited operating room (OR) and ward capabilities.
Strategic evacuation	An En Route Care System (ERCS) that renders care during evacuation from the theater hospital to definitive care inside or outside the continental United States.
SWA	Southwest Asia
Triage/SST	A functional area within an MTF that provides receipt, resuscitation, and sorting of casualties, treating casualties with battle injuries, nonbattle injuries (NBIs), and those who can return to duty within 72 hours. The triage/SST renders general surgical support and preoperative clinical functions.
Ward	A functional area within an MTF. Surgical Company ward provides monitoring and recuperative care to postoperative patients and those who can return to duty within 72 hours. FRSS ward has limited holding capabilities.
WIA	Wounded in action
X-ray	A functional area within an MTF that provides x-ray and processing capabilities.

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The Tactical Medical Logistics Planning Tool (TML+) is a software program designed for Navy and Marine Corps medical planners as a simulation tool that models the flow of patients from the point of injury (POI) through more definitive care, and an operations research tool that supports systems analysis, operational risk assessment, and field medical services planning.

TML+ incorporates extensive data for over 400 patient conditions and their corresponding medical treatment tasks, treatment times, equipment and consumable supplies, transportation assets, medical personnel and required skills, and medical capabilities. It simulates patient losses due to treatment delays and medical complications in order to assess the impact that resource limitations, system bottlenecks, skill limitations, and other factors have on their medical outcomes.

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